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Huw McKay

The Strategic Logic of China's Economy

Millennial Pathways, Mega-strategy and the World in 2100

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To Yolande, Sansa, and Huxley

Foreword

This impressive book by Huw McKay provides what will remain the definitive analysis of the socioeconomic transition of modern China and its precarious journey into the future. The reason is that his innovative empirical investigation employs a realist general dynamic theory, combined with his development of a novel analytical apparatus. This comprehensive approach will be of considerable interest to a wide range of scholars in the disciplines of Big History, international relations, geopolitical strategy, and real-world economics.

Before discussing McKay's book, a few words need to be said about the general dynamic theory that provides its *raison d'etre*. The core methodology of McKay's book involves the application of the 'dynamic-strategy theory' (DST) to the long-run economic transformation of modern China. This is the general dynamic theory that I developed in a series of major publications between 1990 and 2015. It appeared fully formed in my book The Dynamic Society (Routledge 1996). The DST is a powerful analytical—indeed unique—tool for the following reasons:

- It is a holistic general dynamic theory in a world of specific comparative-static models.
- It is a realist theory based on induction, in contrast to the speculative deductive theories that dominate the social sciences in general, and orthodox economics in particular.
- It is a demand-side theory in a world of supply-side models that lack real-world driving mechanisms.
- It is a general dynamic theory that can be successfully applied to all the life sciences, biological as well as social.
- It is a theory that can explain changes in economic, social, and political institutions as well as technological transformations.

There is no need here to explain how the DST works, as that is done skilfully by McKay. More noteworthy, he extends the DST theory and develops a novel way of applying it to developing countries in the following ways. First, McKay attempts to restate my general dynamic theory as a set of algebraic equations. It is his expressed

hope that this relatively succinct statement of my general dynamic theory will bring the DST to a 'new audience', who appear to be challenged by the scope of my intellectual work.

Second, in this book, McKay develops a concept he calls the 'strategic alternator' in order to show how the DST operates at the microeconomic level for modern China. He effectively contrasts this concept of dynamic origins with superficially similar concepts that emerged from comparative-static orthodox economics, such as the national income 'multiplier' (Kahn 1931; Meade 1933; Keynes 1936), the investment 'accelerator' (Clark 1917; Kahn 1931; Hicks 1937), and the 'financial accelerator' (Bernanke & Gilchrist 1989). This is the first attempt to show how the DST can be employed at the micro level for China in both bullish and bearish situations. And it is highly successful.

Third, McKay has conceived an entirely original and effective 'strategy grid', which he uses to analyse the effectiveness of the sub-strategies employed within the wider strategic framework of technological change by a developing society like China. He sees the range of plausible strategic outcomes being much wider for China than for a typical OECD economy. I will leave it to the reader to engage with this concept in the chapters that follow. Clearly, McKay's innovative analytical tool can be more widely employed for other developing countries.

Of interest to all intelligent observers of the world today is the question: What are China's prospects for joining the leading strategic nations of the world, such as the USA, Britain, and other Western European countries? McKay employs the DST and the analytical tools he has developed in this book, to consider a number of 'strategic pathways'. These strategic pathways range from:

- one by which China eventually joins the ranks of global wealthy nations; through to
- one by which China falls considerably short of its potential due to an anti-strategic tilt.

McKay thinks it's most likely that China will achieve a degree of strategic success during the first half of the twenty-first century, but that, during the second half, 'demographic decline' could become 'a gale-force headwind'. In essence, he views China's prospects of catching up with world leaders as challenging, particularly in view of its recent poor strategic decision-making.

What McKay doesn't consider—as it is outside the scope of his impeccable empirical analysis—is what my DST has to say about China's ability to negotiate the forthcoming global technological paradigm shift. (This is discussed in detail in my IGDS Working Paper # 25, June 2020, 'Can China overtake America? Or will it fail to catch the Great Technological Wave once again?') The forthcoming 'Solar Revolution' is the central prediction made by my general dynamic theory, initially in *The Dynamic Society* (Snooks, 1996) and subsequently in a series of publications. As I show, the DST suggests that while China is currently making an impressive attempt to close the gap with the USA, it is highly likely to be overtaken by the next technological paradigm shift—or Solar Revolution—before it is able to do so. This

will be similar to what happened during the late eighteenth to early nineteenth centuries, when China was blindsided by the last great technological paradigm shift—the British Industrial Revolution. During that historical process, China was relegated from the largest economy in the world to one of middle-ranking status. And, I argue, it is likely to happen again, as the Solar Revolution is imminent.

There is much to learn about China's past and possible future from McKay's brilliant and meticulous study. It is a model for future detailed empirical studies of developing economies and should be studied closely.

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Graeme Donald Snooks

Preface

This is a book about China and the impact of its potential future pathways on the evolution of the world-system over the remainder of the twenty-first century. It is also a book about humanity. What general lessons can we learn from the strategies that societies have adopted to pursue survival and prosperity over the millennia? How can we distil that rich empirical record into a dynamic model of macro and micro behaviour? What specific lessons for China can we draw from the regions that presently comprise the strategic core of the world-system?

Wrestling with this series of monumental questions has been one of the major preoccupations of my professional life. The idea that I could address all of them in a single work first emerged in the early 2010s, when I was asked to contribute a paper for the multi-disciplinary *Alliance 21* project. *Alliance 21* sought new perspectives on the US-Australia Alliance in the twenty-first century. I found myself as the sole economist in a workshop full of distinguished international relations and national security scholars and practitioners. Listening to their talk, I quickly realised that the most valuable thing I could contribute was to take the various qualitative or narrative positions they put forward on the economy and quantify them. Knowing the population and productivity arithmetic, I was particularly struck by the seemingly unchallenged idea that one could be simultaneously optimistic on Asian economic growth and a proponent of a long-run balance of power scenario in international relations. Having greatly enjoyed the exercise of showing that those two positions were empirically contradictory, I had a taste of the very long-run, and I was on the lookout for more.

Around the same time, I was also writing a doctoral thesis that applied Snooks' dynamic-strategy theory to China's strategic pathway. As this project evolved, with both greater theoretical ambition and a wider scope of application than envisaged at the outset, and with my scenario modelling of the global economy out to 2100 from *Alliance 21* fresh in my mind, it became obvious that the logical culmination of the work was to take the Chinese analysis out to 2100 and to explicitly position it within the world-system at that date. However, such is the tyranny of pragmatism, I regretfully limited both the timescale of the work and the relative element in the

interests of a timely completion: but with a promise to myself that I would—at some not-too-distant date—take the analysis to its destined conclusion.

The delay in returning to this subject has been a blessing. The early 2020s is exactly the right time for this book to be written. There have been tumultuous changes over the last ten years, and the argument benefits greatly from having observed them: yet a great many things are still highly uncertain. Uncertainty has been amplified by the unique circumstances of the pandemic, and the fragile recovery that emerged in its wake. As I write these words in the middle of 2023, a cacophony of pessimism on China's short-term and long-term prospects has emerged amidst a deep correction in the real estate market, with experts and generalists (mostly foreign) alike weighing in with breathless prognoses of what ails the China of Xi, whether China is suffering from 'Japanification', and whether it is fixable or not. This work is not designed as a counterpoint to the commentariat, but as a balanced, scenario-based study, it may well serve that purpose.

I have also developed as a forecasting practitioner since I first envisaged the possibility of this study. Most importantly, I have been working at the forefront of the emerging field of strategic foresight, which is increasingly displacing conventional economic forecasting in sophisticated organisations that need to take a long view under conditions of uncertainty. This method is deployed in the suite of pathways that conclude the study. Rather than a definitive answer, the inferences derived from them provide what a French prosecutor might describe as a 'bouquet of evidence' as to what China's ultimate pathway within the world-system could be. The intent of these scenarios is to spark debate: not to end it.

Part of the motivation for driving this project to its conclusion is the desire to introduce the dynamic-strategy theory to a new generation of scholars. As China has been home to at least one-fifth of humanity for the duration of the Common Era, no theory of human action claiming generality can plausibly set China aside as a *sui generis* case: and the dynamic-strategy theory has no need to do so. The early part of the book expounds the theory in a novel form and extends it to meet the requirements of the task at hand. A new concept, the *Strategic Alternator*, is introduced and a new visual analytical tool, the *Strategy Grid*, is deployed to provide swift diagnoses of national strategic inclinations, and the relative success of the same, through time. I hope that others will be intrigued by the theory's long-run predictive power and will be inspired to boldly apply it to the many questions of true consequence that humanity faces—from the material to the existential.

A final word on the book's structure. While all the judgements and scenario choices within the work are informed by the dynamic-strategy theory and the Laws of History that are derived from it, they are also inspired by China's very long-term economic history up to the time of writing; and influenced by a detailed assessment of the industrialisation path of Asia's first industrial giant, Japan; and the strategies pursued by selected first- and second-generation industrialisers; and the sole 'anti-strategic' superpower of the Industrial Era, the U.S.S.R. So, to paraphrase the opening line of this preface, this *is* a book about China and its future, but it is *also* a book about the broad sweep of human history, macro and micro behaviour, and our quest to survive and prosper.

A final note. All views expressed in this book are personal, and should not be ascribed to my employer, BHP Ltd, a listed mining company with considerable business interests in China.

Singapore, Singapore Huw McKay

Symbols and Pro-Numerals from the Dynamic-Strategy Theory

O The strategic outcome [income per capita]
L Labour
K Capital
R Natural resources [including broad geographical context]
T Technological paradigm
M Money
$\dot{T}_c$ Technological change
Φ Composite of strategic factors; also the strategic mix
P Composite of physical factors L, K, and R
S_D Strategic demand
S_C Strategic confidence
S^R Strategic revenues
S^C Strategic costs
S_P Strategic prices (level)
S_I Strategic institutions
S_L Strategic leadership
S_O Strategic organisations

Symbols and Pro-numerals from the Strategic Alternator

Z fixed inputs to the production process
v variable inputs to the production process
b liabilities
r interest rate payable on liabilities
la liquid assets
α proportion of liquid assets allocated to purchasing variable inputs
k fixed and illiquid assets owned by the borrower
q market price of k
δ lender's discount of the market valuation of k
Ψ seniority of the lender's claim on the borrower

Symbols and Pro-Numerals used Elsewhere

X	exports
Y	gross domestic product
N	population
IVA	industrial value-added
Π	threshold relative level of income per capita for membership of the strategic core

Acknowledgements

My primary intellectual debt is to Graeme Snooks. Graeme encouraged me in the pursuit of the biggest questions, challenging me to rise above the conventional to seek ultimate truth. That, of course, is a lonely road. I am honoured that he has accepted me as a fellow pilgrim and agreed to provide the foreword to this volume.

Regarding my interest in China, I am deeply indebted to the Chinese Economy Program at the Australian National University. As a young scholar I learnt so much attending their conferences and devouring the associated volumes, which I came to know as the best of their kind outside of China. I would particularly like to thank Ligang Song for his generosity and kindness over the last 20 years or so. I also learnt a great deal from the participants in these gatherings, including Ross Garnaut, Jane Golley, Xin Meng, Peter Drysdale, Guonan Ma, Yiping Huang, Cai Fang, Wing Thye Woo, Bob Gregory, Xiaolu Wang, Justin Lin, Nick Lardy, Jeffrey Sachs, Barry Naughton, Shang-Jin Wei, Yang Yao, and Warwick McKibbin. In the private sector, catching up with and learning from Jon Anderson was always a highlight of a Hong Kong-Shanghai-Beijing swing, while the late Ivan Roberts was an impressive policy maker whose views I respected.

Regarding my love of history, in both its traditional and economic forms, I was lucky to have outstanding, passionate, and demanding teachers in my undergraduate days. Ben Tipton inspired my interest in comparative economic systems, firm structures, and grand theory. Diane Hutchinson instilled an interest in business history. Robert Aldrich was a superb instructor in the fields of imperialism, social and cultural history.

Regarding the book itself, I would like to thank Andrey Korotayev, who is Head of the Laboratory for Monitoring of the Risks of Sociopolitical Destabilization at the Higher School of Economics in Moscow, for seeing the potential in this project; and to Gary Magee and Barry Rodrigue for their useful comments on an earlier version of the work.

Finally, without the unfailing support of my wife Dr Yolande Kyngdon-McKay, this book would not exist. I dedicate this work to her, to our children, and my mother Mary.

Contents

Part I Theoretical Foundations

1 The Strategic Logic of China's Economy 3

2 The Dynamic Strategy Theory, a Formal Statement 17

3 Industrialisation Sub-strategies: Theory and Practice 41

4 Asia's First Industrial Giant: Japan's Strategic Pursuit 73

Part II China

5 China's Millennial Pathway in a Strategic Mirror 119

6 China's Economic Performance and Strategic Pathway from the Late Qing to the Death of Mao 155

7 China's Strategic Pathway from Deng Xiaoping to Xi Jinping 183

8 The Xi Inheritance 225

9 China's Strategic Pursuit under Xi Jinping and the New Era 259

10 China in the World-System: Strategic Pathways to 2100 281

Appendix: The Laws of History 305

Bibliography of Databases 309

Index 311

About the Author

Huw McKay is an economist and historian who has been spent the last two decades studying the Chinese economy in a forecasting career that has ranged across business, finance, government, and academia. He is presently the Chief Economist of BHP Group Ltd., the world's largest mining company, and lives in Singapore. His published work on China has covered a wide range of subjects, including development strategy, international finance and exchange arrangements, long-term resource demand, international trade, and long-run structural change. Dr McKay received his PhD from the Australian National University.

List of Figures

Fig. 1.1 The strategy grid and its quadrants 7
Fig. 1.2 Quadrupling living standards from a base of US $2000 GDP per capita (1990 international dollars) 9
Fig. 2.1 Technological paradigms of human history: The three basic states of *T* (i.e. T.) 20
Fig. 3.1 Industrialisation sub-strategies: Successful kinks 50
Fig. 3.2 Industrialisation sub-strategies: Dependent kinks 51
Fig. 3.3 Completing the Strategy Grid: adding the quadrants 53
Fig. 3.4 Industrialisation sub-strategies: Exhaustion and viability following a domestic demand-dependent kink 56
Fig. 3.5 Strategy grids for major industrial economies: trade lens 57
Fig. 3.6 Strategy grids for major economies: industrial output lens 58
Fig. 3.7 A closer inspection of Germany's strategy in scale terms 62
Fig. 3.8 Russia's strategy grid in the long nineteenth century 63
Fig. 3.9 A closer inspection of Britain's strategy from 1750 64
Fig. 3.10 A closer inspection of the USA's strategy from 1820 65
Fig. 4.1 Japan's IVA share and relative living standards: 1870–2010 74
Fig. 4.2 Japan's export share and relative living standards: 1891–2010 ... 75
Fig. 4.3 The "flying geese" model of industrial development: schematic form 81
Fig. 4.4 Japan's IVA share and relative living standards: 1870–1940 83
Fig. 4.5 Japan's export share and relative living standards: 1891 84
Fig. 4.6 Japan's international trade from 1955 90
Fig. 4.7 Japan's IVA share and relative living standards: 1950–1973 92
Fig. 4.8 Japan's export share and relative living standards: 1961–1973 ... 93
Fig. 4.9 World export and GDP growth in the 1960s and 1970s 94
Fig. 4.10 Gross investment and gross savings: Japan 96
Fig. 4.11 Japan's IVA share and relative living standards: 1973–1991 99
Fig. 4.12 Japan's export share and relative living standards: 1973–1991 ... 99
Fig. 4.13 Japan's relative living standard: PPP and market basis 103
Fig. 4.14 Japanese land and equity prices since 1955 103

Fig. 4.15 Japan's strategic leadership errs 104
Fig. 4.16 Japan's debt overhang 105
Fig. 4.17 The crash of strategic confidence after 1990 through the lens of corporate saving 106
Fig. 4.18 Japan's IVA share and relative living standards 1991–2010 107
Fig. 4.19 Japan's export share and relative living standards 1991–2010 107
Fig. 4.20 Japan's strategic industrialisation pathway since 1950 110
Fig. 5.1 China's population growth and dispersion strategy 128
Fig. 5.2 The carve-up of China: a *Belle Époque* perspective 144
Fig. 6.1 China's relative living standard over two millennia 157
Fig. 6.2 China's strategic malaise: 1820–1950 158
Fig. 6.3 Investment and growth phases from 1953 to 1980 174
Fig. 6.4 China's anti-strategic pathway: 1952–1978 180
Fig. 7.1 (**a**) China's Export Strategy Grid: 1978–1985. (**b**) China's Industrial Value-Added Strategy Grid: 1978–1985 190
Fig. 7.2 (**a**) China's Export Strategy Grid: 1978–1992. (**b**) China's Industrial Value-Added Strategy Grid: 1978–1992 195
Fig. 7.3 Fiscal revenues and outlays by level of government 197
Fig. 7.4 The declining footprint of wholly state-owned firms 199
Fig. 7.5 (**a**) Chinese exports and relative living standards: 1992–2001. (**b**) Chinese IVA and relative living standards 201
Fig. 7.6 China's broad sectoral trade balances: 1980–2013 209
Fig. 7.7 The importance of foreign firms in China's trade flows 213
Fig. 7.8 (**a**) Chinese exports and relative living standards: 2001–2013. (**b**) Chinese IVA and relative living standards 214
Fig. 7.9 The efficiency of Chinese investment in the reform era: ICOR ratios 218
Fig. 8.1 [also 1.2] Quadrupling living standards from a base of $US2,000 per capita 229
Fig. 8.2 (**a**) Selected characteristics of successful future industrialisers at the $2000 per capita level 231
Fig. 8.3 Export orientation at both $US2000 and $US8,000 PPP GDP per capita 232
Fig. 8.4 Income distribution in selected economies: 2020 or latest 234
Fig. 8.5 Stability, income level, and financial repression or freedom 239
Fig. 8.6 The middle-income non-reform trade-off thesis 239
Fig. 8.7 Primary motivations for saving among Chinese households 243
Fig. 8.8 Urban rail system density and population density 245
Fig. 8.9 Infrastructure stock per capita and income per capita 246
Fig. 8.10 Comparative wage levels in manufacturing across Asia: 2013 ... 247
Fig. 8.11 Wage levels in manufacturing and relative logistics performance 248
Fig. 8.12 Anti-dumping suits initiated against China: share of total 250
Fig. 8.13 China's world export share and its real exchange rate 251
Fig. 8.14 Return on assets and state ownership share by industry sector ... 253

Fig. 9.1 Hypothetical pathways: a smooth transition under "Dual Circulation" 266
Fig. 9.2 Hypothetical pathways: middle-income trap 271
Fig. 9.3 (**a**) Hypothetical pathways: Abrupt retrenchment following a domestic demand-dependent kink. (**b**) Hypothetical pathways: Abrupt retrenchment following an export-dependent kink 272
Fig. 10.1 China's declining share of world population from 1600 to 2100 297
Fig. 10.2 Pathway A: Song-Schism, 1950–2100 298
Fig. 10.3 Pathway B: Schism-Shadow, 1950–2100 298
Fig. 10.4 Pathway C: Shadow-Song, 1950–2100 299
Fig. 10.5 Pathway D: Shadow-Schism, 1950–2100 299
Fig. 10.6 Hegemonic scale within the Strategy Grid 300

List of Tables

Table 2.1 Dynamic strategies of selected societies 21
Table 3.1 Dynamic substitution in the USA, 1820–1913 68
Table 4.1 Dynamic substitution in Japan, 1876–1940 78
Table 5.1 Strategic and traditional taxonomies of Chinese history 122
Table 6.1 China's world-system status from 1820 to 2018 158
Table 6.2 The composition of China's trade in goods: 1870–1910 163
Table 6.3 Structure of Chinese GDP in constant 1933 yuan, 1890–1952 165
Table 6.4 Growth rates by national accounts sector: 1890–1952 166
Table 6.5 Growth rate of Chinese industrial production, 1890–2007 167
Table 6.6 Output volume and growth, selected commodities, 1912 to 1952 167
Table 6.7 The investment share of Chinese GDP under various deflators 167
Table 6.8 Various indicators of Chinese industrialisation: 1952–1978 172
Table 6.9 The realised investment share in planning periods prior to 1978 173
Table 7.1 Various indicators of Chinese industrialisation: 1978–1995 188
Table 7.2 Contrasting the reforms of the 1980s and 1990s 196
Table 7.3 WTO and GATT accession dates, absolute and relative income levels, and international investment positions 204
Table 7.4 Revealed comparative advantage: 1970–2010 207
Table 7.5 China's percentage share of global exports: 1990–2015 210
Table 7.6 China's percentage share of global imports 211
Table 7.7 Various indicators of Chinese industrialisation: 1978–2014 217
Table 7.8 External indicators of Chinese industrialisation: 1978–2014 218
Table 8.1 Quadrupling living standards from a base of $US2,000 per capita 230
Table 8.2 Producer subsidy equivalents of factor market distortions in China, 2000 to 2009 (percent of GDP) 237

Table 9.1 Word use in Xi's Work Reports to the 19th and 20th CCP Congresses 275
Table 10.1 Long-term projections of China's relative GDP per capita 289
Table 10.2 The pathways 292
Table 10.3 World population by region 1950–2100: levels 294
Table 10.4 World population by region 1950–2100: shares 296
Table 10.5 The Hegemon's share? Song hypothetical versus USA reality 300

Part I
Theoretical Foundations

Chapter 1
The Strategic Logic of China's Economy

1.1 Introduction

This work seeks to elucidate the strategic logic of the Chinese economy through time and, in so doing, shed light on two major long-run questions—one absolute and one relative—that will be influential in the evolution of the world system for the remainder of the twenty-first century. The first is how plausible are China's aspirations to ascend to high-income status and join the world-system core? The second is to consider China's *relative* weight in the world system over the duration of the twenty-first century, an exercise that in many ways depends upon the first—especially where a potential hegemonic challenge is at stake.

Neither question can be answered definitively, and this study does not attempt to do so. Rather, a suite of scenarios or pathways have been compiled to test the range of plausible futures for China within the world system, referencing suitable analogues from history, a range of empirical evidence, and logical inferences drawn from the same. The work has been compiled against a fluid backdrop where the odds of optimistic and pessimistic outcomes have been changing dynamically, with the relatively benign economic and geopolitical world-system era of the past half century giving way to a new era of multifaceted strategic competition between Great Powers. This emerging competition, with China as a central protagonist, adds further complexity to the already difficult task of long-run strategic projection.

There are any number of potential pathways that China might take between today and 2100. In the face of such uncertainty, it is not helpful to present a single global future as a platform for debate. Rather, this work will conclude by presenting and discussing a suite of scenarios that together cover a range of plausible outcomes for the Chinese people over the remainder of this century. These scenarios will be visualised within the contours of the *Strategy Grid*, a new tool of strategic diagnosis formally introduced in Chap. 3.

Before this, a detailed empirical examination of China's very long-term economic history up to the time of writing will be presented, culminating in an assessment of

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Xi Jinping's inheritance, and the strategic mix his administration is likely to pursue in the time out to 2035 (or so). This is complemented by a lengthy assessment of the industrialisation path of Asia's first industrial giant, Japan, and a discussion of the strategies pursued by selected first- and second-generation industrialisers. The entire argument is framed by Graeme Snooks' dynamic strategy theory, abbreviated as "DST" henceforth, which is expounded in a novel form and extended to meet the requirements of the task at hand. A new theoretical concept, the *Strategic Alternator*, is introduced to provide a formal microeconomic bridge between the general theory and the pragmatic empirical requirements of the study's ultimate objectives.

The major inferences derived from the bouquet of evidence that the scenario suite provides are as follows:

1. It is plausible that China may one day join the ranks of wealthy, technological adept economies that define the core of the world system and the living standards frontier.
2. It is also plausible that China fades away as a major strategic entity in the world system, as the unintended consequence of discretionary decisions by its leadership.
3. The likelihood of (1) occurring has decreased in the last decade, and the likelihood of (2) occurring has increased. These assessments are partly due to the outbreak of overt Great Power rivalry and partly due to developments within China's own political economy. Neither scenario though can be deemed probable at this juncture. Rather, they serve as the plausible bookends of a very wide range.
4. The range of plausible outcomes for China that sit within the bookends of (1) and (2) is far wider, arguably, than for the majority of societies today. This uncertainty produces a very complex long-run strategic planning problem for other players in the world system.
5. The chances of China moving into the forefront of nations in terms of GDP per capita by or before 2100 are greater than its chance of retaining or increasing its absolute weight in the world system in that same year. Demographic decline is a gale-force headwind for China that will fundamentally constrain its ability to expand quantitatively in the second half of the century.
6. Following (1), and building on (5), it is plausible that China temporarily achieves "hegemonic" scale thresholds in the middle third of the century before demographic decline sets in.
7. China's zenith within the world system is yet to be reached, even in a pessimistic scenario.

1.2 Theoretical Foundations

The argument will be framed by Graeme Snooks' DST (Snooks 1996, 1997, 1998a, b, 1999; McKay 2008a, b, 2014a). The first part of the book is devoted to expounding this theory and adapting it to the requirements of the specific questions that are ultimately under consideration.

In Chap. 2, a novel algebraic formulation of Snooks' far-reaching insights is introduced. The scale of the Snooksian canon is intimidating. Its size reflects the immense intellectual labour that is required to apply the inductive method of general theory building that resulted in the discovery and articulation of the DST. That work has been comprehensively done by the theory's progenitor. It is not the task of this book to recapitulate the vast quantity of empirical evidence that supports the DST framework, or to harness more. What is within the bailiwick of this study is to adapt and package the profound results of this breathtaking research agenda in a fashion that can be more easily absorbed and to apply the DST to the very practical question of assessing China's long-term development prospects and its place in the world system.

It is to be hoped that a residual benefit of this study will be that the DST is introduced to a new audience to whom this relatively succinct statement may appeal. This may in turn lead to wider use of the DST to further our understanding of both history and the contemporary world while simultaneously helping us make sensible predictions on the future direction of the world economy and the societies within it.

Chapter 2 sets out the basic theoretical parameters of the DST and the *Laws of History* (Snooks 1998a) derived from them that are most pertinent in this context. Note that a full exposition of the *Laws* is provided in Appendix. Following the initial introduction of the DST and the key concepts within it that are critical to the entirety of the argument, Chap. 2 goes on to indicate how the high-level concepts embodied in the DST can be applied in a practical manner. In particular, the DST will be extended to offer a new perspective on the cyclical, wave-like rhythm of economic activity at multiple frequencies that is observed across the historical record. This task involves introducing a new concept, the *Strategic Alternator*. This extension serves to illustrate the microeconomic basis of the DST and to emphasise the pro-cyclical nature of the interaction between confidence, asset and economy-wide prices, rising living standards, and real-world decision-making.

To aid the reader in following the formal argument presented in Chap. 2, a full listing of the symbols and pro-numerals used in the algebraic formulation of the DST and the *Strategic Alternator* is included in the front matter of the book. Readers already familiar with Snooks' work will presumably find Chap. 2, and this introduction itself, easy to absorb and may not need to refer to this resource at all. However, for those not already exposed to the DST there is an unavoidable orientation period in which the reader is confronted by a plethora of new terms and concepts. Readers in this category should thus refer liberally to this resource as they progress through the study. In this same vein, the author requests that readers in this category remain patient, as there will be, unavoidably, references to unfamiliar terminology in this introduction. The definition and explanation of these terms and concepts is the task of Chap. 2 and cannot practically also be included in this overview. As indicated above, it is the author's hope that this study may awaken a broader interest in the DST itself. Hence, every effort has been expended to make the reader's comprehension task as straightforward as possible. However, some unavoidable tension in this regard will pervade throughout this introduction.

Chapter 3 builds on the foundation laid by Chap. 2. Its principal task is to construct a pragmatic bridge between the high theory and its microeconomic underpinnings and the detailed empirical assessments that follow. The DST is truly general in the sense that it can be constructively applied at any point in human history, and even beyond the boundaries of economics and humanity to address questions in the life sciences and other philosophical disciplines (Snooks 2003, 2007, 2010). However, as this study is seeking to answer a predominantly economic question posed in the present, the DST can be usefully pared down to encompass those strategic considerations most relevant to the world system in which China is attempting to prosper. That world system is defined by the technological paradigm that has been unfolding since the Industrial Revolution, which in turn has been shaped by the strategic pathways of the frontier economies that now sit at its core.

A major component of Chap. 3 is thus devoted to clearly outlining a taxonomy of industrialisation sub-strategies that operate under the industrial paradigm. The industrial paradigm has gradually disseminated across the globe from the revolutionary pioneers of Britain and the Low Countries, first reaching East Asia via Japan in the second half of the nineteenth century, and only truly infiltrating China with the opening up of the economy from the late 1970s. There is a single point of commonality in the strategies pursued by all nations that have proactively engaged with the industrial paradigm. That point is that technological change is positioned as the lead strategy driving their societies forward. The way other strategies are utilised to complement and enhance the technological lead—the strategic mix—varies widely, as do the sub-strategic approaches developed for the challenges of specific epochs. The framework put forward here will frame everything that follows.

The bridging framework will be initially put forward in the abstract. It will then be illustrated empirically, with reference to the experience of selected first- and second-generation industrialisers, viz. Britain (the UK), France, Germany, Russia,[1] and the USA. The timeframe for these case studies is, roughly, the "long" nineteenth century. These case studies offer the reader a variety of scenarios through which they can familiarise themselves with the techniques of strategic diagnosis and interpretation that are central to the later argument.

Chapter 3 also introduces a simple but powerful tool for strategic taxonomy and diagnosis under the Industrial banner. The basic canvas is a scatter plot that pairs an individual nation's world export share (vertical axis) with its income per capita relative to the frontier economy of the day (horizontal axis). This is the *Strategy Grid* (Fig. 1.1). The success and nature of any strategy between two points in time can be easily diagnosed in this space. When a number plane with its origin at the earlier of the two points is superimposed on the scatter, the schedule will pass through one of the four quadrants (unless it is perfectly horizontal or vertical)—points where the

[1] The analysis of Russia suffers from data constraints prior to 1860. That proved to be an impediment to producing an analysis of equivalent depth to the other regions named in the main text.

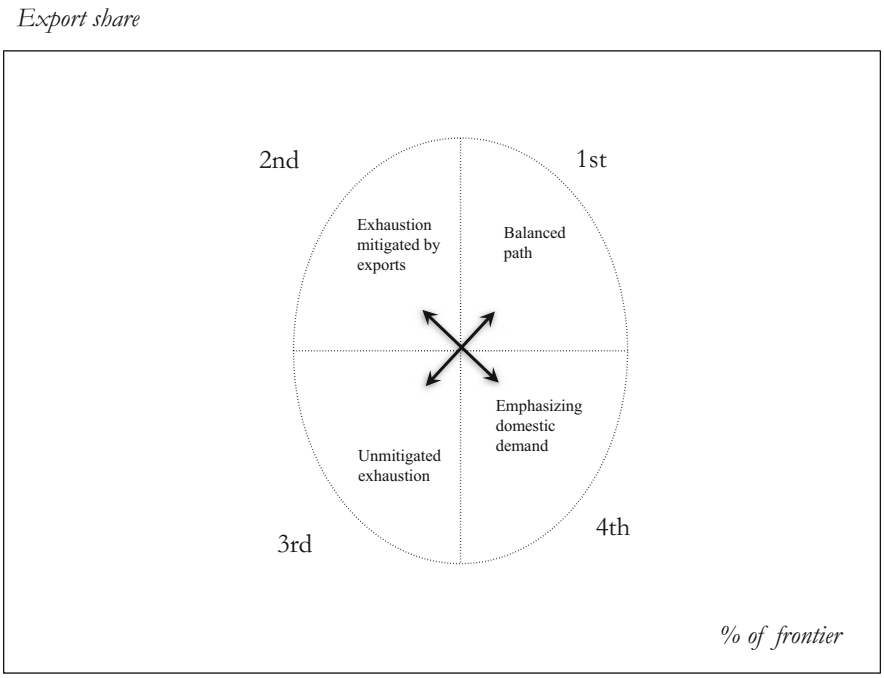

Fig. 1.1 The strategy grid and its quadrants. Source: Author's own conception

curve changes direction are "strategic kinks". Over time, these scatter plots depict a nation's strategic pathway.

Each of the quadrants has a different strategic import, with the first quadrant the most desirable, the third the least desirable, and the second being a dangerous place to reside, while the fourth quadrant may or may not be a desirable place to be, depending upon the fundamentals in place at the time (see Fig. 1.1). Each of these quadrants is discussed at length in Chap. 3, with the goal being that the reader is afterwards able to instantly recognise the strategic implications of the real-world data presented later in the study, both in the case studies and for China itself.

The discussion in Chap. 3 also leads to the identification of an important endogenous outcome of successful outward-oriented industrialisation: dynamic substitution in international trade.[2] This concept is referred to frequently in the later discussions.

To recap, Chap. 2 introduces the DST and its corollary, the *Strategic Alternator*, as a general framework for understanding the development of human societies and the economies that serve them. Chapter 3 narrows the focus to strategic choices

[2]There is some similarity between this concept and Akamatsu's (1962) "Flying Geese" model as well as the "economic complexity" framework developed by Harvard University's Growth Lab, available from https://atlas.cid.harvard.edu/

under the industrial paradigm and illustrates the associated concepts both empirically and in the abstract. So, by the end of Chap. 3 the theoretical foundations are all in place. A reader who came to the task with no prior knowledge of the DST should be in a position to consider long-run development questions in a strategic manner by the end of Chap. 3. A reader already familiar with the Snooksian canon will have absorbed a novel, algebraic rendering of the DST, and been introduced to both a formal microeconomic extension and a bridging theory adapted for the task at hand.

1.3 Asia's First Industrial Giant: Lessons from Japan

The first main empirical chapter of the book, the fourth, couches Japanese development since the late Tokugawa within the framework outlined in Chaps. 2 and 3. The Japanese case study provides further robust validation of the veracity of the general system. It also provides a range of lessons and specific points of contrast relevant for the Chinese experience.

First in Japan (Johnson 1982), and then later in China (McKay and Song 2010), "developmental" states adopted strikingly successful industrialisation strategies with a common thread of outward orientation. These strategies resulted in the swiftest quadrupling of national living standards from the $2,000 per capita level (1990 international dollars) in the historical record, at 17 and 16 years, respectively (McKay and Song 2013, p. 78; Table 5.1 and Fig. 1.2). The fact that Japan and China were both relatively large nations at the outset of their respective strategic industrialisation drives makes the rapidity of their high growth phases all the more remarkable.

The superior economic performance of Japan, China, and other East Asian economies has attracted a great deal of attention from scholars across the social sciences. Orthodox economists have sought to account for the sources of this "miraculous" growth (Denison and Chung 1976; World Bank 1993; Young 1995; Krugman 1994; International Monetary Fund [IMF] 2006; Wang 2007). Development economists have found East Asia a fertile testing ground for the generalised theories put forward in other contexts (Fei and Ranis 1964; Minami 1973; Sugihara 2007). Political scientists and economists outside the mainstream have highlighted the elevated role of East Asian "developmental states" (Amsden 1988, 2001; Evans 1995; Haggard 1996; Johnson 1982; Wade 1990; Woo-Cumings 1999; Kim et al. 1995). Others have been drawn to distinctive Asian firm structures and the institutionalised links between finance and industry (Aoki and Patrick 1994; Calder 1988, 1993; Sheard 1996; Tipton 2007; Woo 1991; Zysman 1983). Economic historians and comparative political economists have also made much of the "non-liberal" approach of East Asia (Dore 2000; Streek and Yamamura 2005). The implication of East Asian economic growth for the global balance of power, first in the Japanese context and now increasingly with respect to China, has been an especially productive theme (Bernstein and Munro 1997; Calder 1995; Dewey 1921;

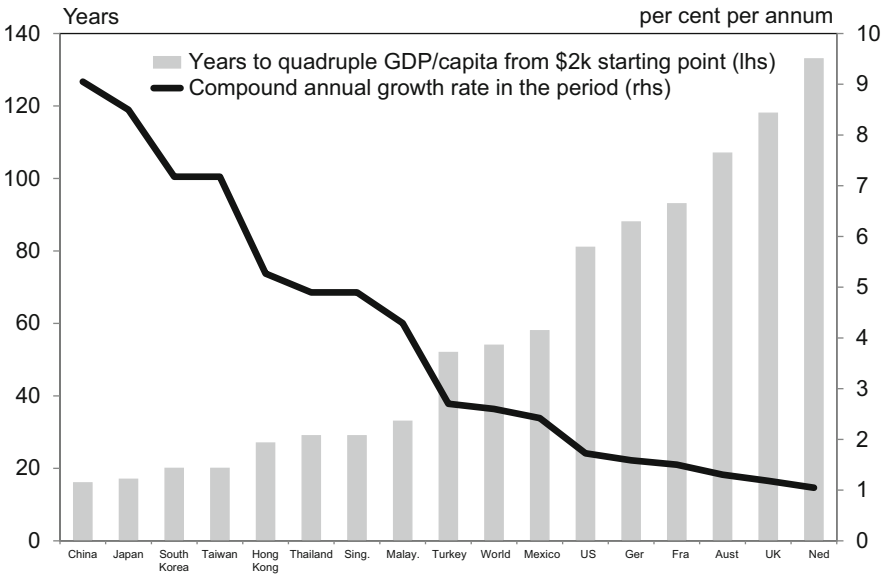

Fig. 1.2 Quadrupling living standards from a base of US $2000 GDP per capita (1990 international dollars). Notes: All information on post-Second World War GDP and GDP per capita levels reported in this chapter is based on the Conference Board and Groningen Growth and Development Centre's Total Economy Database™ as issued in January 2012, which is available from http://www.conference-board.org/data/economydatabase/. Data before 1950 and for the world economy as a whole is sourced from Maddison (2009), *Historical Statistics of the World Economy: 1–2006AD*, March update, available from http://www.ggdc.net/maddison/. All underlying data are 1990 Geary-Khamis international dollars. Source: Reproduced from McKay and Song (2013, p. 77). Note this figure is later reproduced as Fig. 8.1

Fallows 1994; Garnaut 1989; Kim 2004; McKay 2012b; Nye 2004; Vogel 1979; White 2012).

This vast literature has identified the proximate drivers of East Asian economic growth as a high savings rate, the rapid investment rates it facilitated, a demographic dividend and large-scale urbanisation, technological and productivity catch-up, and centrally, an outward orientation for manufacturing. Alongside these macroeconomic fundamentals are distinctively "Asian" institutions, including the developmental leadership of the state (in the form of an elite bureaucracy) so painstakingly documented by successive generations of scholars (Aoki et al. 1996; Kim et al. 1995). An amalgam of these observations has become the consensus model of East Asian economic development.

Missing from this body of work is a coherent dynamic theory that makes systematic sense of East Asia's rise in the broadest context while simultaneously accounting for the eventual stagnation of the leading goose in the skein, Japan. This study makes an initial attempt at bridging the gap and applying such a framework to project the likely future trajectory of China while also recasting Japanese economic history within the same theoretical contours.

Japan (the subject of Chap. 4) was the first nation outside of Europe and its settler economies to successfully pursue a primary strategy of technological change. In terms of observed ability to sustainably raise living standards in the long run, post-Meiji Japan is inarguably one of the most conspicuously successful societies of the industrial era. Japan doubled its relative GDP per capita between the Meiji restoration and the onset of World War II and then quadrupled it over 40 years from the post-war trough. By doing so it was able to join the frontier economies in the "strategic core", once again as the first non-European or settler society to do so.

Japan remains an important global entity, and it has retained its frontier status up to the time of writing, but it has also suffered through three deflationary "lost decades" in the 1990s, 2000s, and 2010s, with an associated unravelling of the strategic confidence that was so tangible as the economy's high growth era crested. Japan's striking successes from the second half of the nineteenth century through 1990 or so, and its subsequent deflationary struggles, make it a tremendous test case for the application of the DST. Furthermore, its unique status as Asia's first industrial giant makes a detailed examination of its long-run industrialisation strategy a necessary stepping stone on the path towards a robust discussion of the future of Asia's second industrial giant, China.

The fact that China is now at the middle-income level (Fung and Yao 2014; McKay and Song 2013), has much in common with middle-income Japan from an aggregate strategic point of view (McKay 2012a; Morinobu 2006), is in the midst of a significant period of strategic uncertainty, and has a highly engaged strategic leadership that is actively seeking to transition to a new growth model ahead of the ultimate exhaustion of the extant version (Garnaut et al. 2013; McKay and Song 2013; World Bank and Development Research Center of the State Council, People's Republic of China 2012) makes a careful recapitulation of the Japanese story in a dynamic strategic context the appropriate starting point for considering China's present challenges and future prospects. Ergo, Chap. 4 is a vital link in the argument and a critical bridge between the theory and the detailed examination of China's long-run economic history and its contemporary state that comprises Chaps. 5–9.

1.4 China's Historical Development Path and Future Prospects Within the World System

The large, long-run questions this work aims to tackle are inseparable from the contemporary debate about China's growth and political-economic model, which is now being buffeted by an emergent Great Power rivalry. They are also intimately related to the angst about escaping the "middle-income trap" (Fung and Yao 2014; Woo 2012), with the desire for "rebalancing" (McKay and Song 2012), the theme of "looking inwards" for growth (Tyers 2012), optimising urbanisation (McKay and Song 2012), and the much vaunted rise of the Chinese consumer middle class (Farrell et al. 2006; Kharas 2010; Li 2010; McKay 2014b, 2015). However, it is

also inseparable from issues of path dependence (McKay and Song 2013), and in China's case, threads of continuity may run for thousands of years (Elvin 1973). The deep psychological scars embodied in the phrase "century of humiliation", Deng's exhortation that the nation "hide its strength and bide its time" in foreign relations, and the recently more muscular nationalistic ethos of Xi centred on the credo of the "rejuvenation of the nation" are all relevant for considering how China may navigate the complexities of Great Power rivalry in the present day and in the decades to come. Therefore, a systematic examination of the broad sweep of Chinese economic history is necessary to fully comprehend the contemporaneous context.

Chapter 5 considers China's remarkably long history of unitary empire through the lens of the DST. China's experience has turned up two major conundrums that continue to engender controversy. The first is the extraordinary longevity of the empire, which is in stark contrast to the experience of Old World conquest societies (Snooks 1996; Taagepera 1978). The second is the famous "Needham question" (Chen 1991; Elvin 1973; Lin 2012; Needham 1954; Pomeranz 2000), which asks why China failed to produce an industrial revolution during the Song dynasty, given its global technological leadership at the time and the obvious progress in productive techniques that characterised the period.

Chapter 5 features an alternative periodisation of China's imperial history that is presented in order to recast the traditional dynastic taxonomy in the DST framework. In addition, Snooks' own perspectives on China's long-run strategic choices will be discussed, with a view to providing explanations for both the longevity of the Chinese empire and the Needham question within the theoretical construct framing this book. Finally, the discussion turns to the decline of the Qing dynasty—the last of the imperial age—and the strategic difficulties that the economy faced as the shocking reality of Chinese backwardness was revealed in the century of humiliation that preceded the rise of the People's Republic.

Chapter 6 builds on the big-picture historical narrative in Chap. 5, following events from the late Qing up to the death of Mao, which, not coincidentally, just preceded the opening of the reform era. Just as Chap. 3 served as a bridge between the "high theory" of Chap. 2 and the practical application of the theory to Japan in Chap. 4, Chap. 6 bridges the "macro history" of traditional China presented in Chap. 5 with the systematic examination of the strategic pathway of the People's Republic of China and the assessment of its longer run prospects that follows.

Chapter 6 offers a broad empirical survey of China's economy since the late Qing, taking the period as a whole. It also reaches a crucial judgement on the timing of China's entry into an industrialisation strategy. After an extended discussion, the study franks the consensus timing of the early 1950s on the basis that prior to this time the traditional economy remained dominant in the lives of the majority of the population. The society-wide impact of "enclave industrialisation", in either its treaty port or Manchurian manifestations (Naughton 2007), was modest. Furthermore, the share of capital formation in expenditure prior to the 1950s was deemed to be far too low to be consistent with an economy-wide industrial thrust.

Chapter 6 also highlights the timing and nature of the multiple strategic and *anti*-strategic kinks over time prior to the onset of the reform era in 1978. It is argued that

while launching and deepening industrialisation was clearly a major focus of the policies pursued by the Chinese Communist Party (CCP) leadership from 1949 to 1978, the framework was in reality anti-strategic. As the Maoist model systematically eschewed outward engagement, economic competition, and the use of market-based price signals to guide decision-making, it is clearly identified as anti-strategic. Furthermore, Mao's anti-strategic policy salvoes continuously derailed the economy, prohibiting it from gaining momentum. Uncertainty prevailed and confidence was scarce. The pervasive uncertainty and individual insecurity (material and existential) that these policies produced were inimical to sustained economic growth and its concomitants, widespread individual material progress, and aggregate, society-wide success. The result was that despite periods of promise, China was no further advanced in terms of relative living standards in 1978 than it was in 1952. The Chinese people, particularly the rural majority, suffered from a range of deprivations brought about by the incoherent policies begat by the anti-strategic belief that political ideology could triumph over economic (strategic) logic.

The Chinese people deserved much, much better than that, and with the ascent of Deng, they were about to get it. This is a neat *segue* into Chap. 7, which traces the contours of China's remarkably successful turn towards an outward-oriented industrialisation strategy from 1978 forward. The spectacular outpouring of economic growth that has occurred in China since that fundamental kink in its strategic approach represents arguably the most impressive and sustained increase in society-wide living standards ever achieved by an already large economy over a four-decade period.

The first task of Chap. 7 is to analyse the economy's initial move to engage with outward-oriented industrialisation from 1978, involving parallel reforms in the domestic economy and in the traded sector (McKay and Song 2012, 2013). This is a continuation of the narrative history of Chinese society presented in Chaps. 5 and 6, conducted as ever within the confines of the DST and the *Strategy Grid*. The argument then shifts to focus more narrowly on China's international engagement since 1978. It will be demonstrated that the dynamic substitution effect first identified in Chap. 3, which has characterised the strategic pathway of other successful, outwardly oriented latecomer industrialisers, is also highly evident in China, although it is as yet far from mature.

Chapter 7 concludes by putting forward the normative idea that China's next strategic kink would ideally take it closer to the border of the first and fourth quadrants, implying a greater reliance on domestic demand than before, while still retaining a semblance of balance by continuing to achieve modest gains in export market share from an already elevated position. It is the success or failure of this strategic enterprise that will determine whether or not China will be able to reach the high-income status it seeks by 2035 (World Bank and Development Research Centre of the State Council 2012; Xinhua News 2021), thereby joining the outer ranks of the frontier economies at the core of the world system. Early signs of this can be seen in the second half of the 2010s, and in the tone and targets of the 14th 5YP (hereafter 5YP, beginning 2021), whose basic theme is "dual circulation", a version of self-reliance with selective international engagement.

Chapter 8 is entitled “Xi’s inheritance”, and Chap. 9 is entitled “China’s strategic pursuit under Xi Jinping and the new era”. The first clearly sets out the system that Xi inherited as leader of the People’s Republic of China, and the second documents his responses while cataloguing the achievements and disappointments of his first two administrations. Chapter 9 also draws out forward-looking strategic inferences to assist with the very long-term scenario analysis of Chap. 10.

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Chapter 2
The Dynamic Strategy Theory, a Formal Statement

2.1 Introduction and Motivation

The DST was independently developed by Graeme Snooks in a series of landmark works going back to *The Dynamic Society* in 1996.[1] This chapter presents the central tenets of the DST as an algebraic formulation, which is the first time that this task has been attempted. The motivation for doing so is simple. The Snooksian canon is now so extensive that there is a vital need for a succinct statement that can both be referred to by specialists and can serve as an introduction for those who are new to the work. The desire to construct this summary has much in common with the sentiments of Rendigs Fels, who wrote this somewhat apologetic preamble to a summary article on Schumpeter's theory of business cycles:

> When in discussing the theory or history of business cycles it becomes necessary to refer to Schumpeter's treatise, *an embarrassing dilemma presents itself. Either one must summarise too briefly a theory too elaborate and rich in detail to lend itself to such treatment, or one must assume the reader has an intimate knowledge of the theory such that few who have not read his book recently are able to retain*. This makes his treatise less useful than its merit warrants; the historical portions are difficult to utilise directly because they contain so many allusions to details of the theoretical model. In my own work, I have felt the need of a compact summary not only to use myself but also to refer the reader to. These are the reasons for the summary which follows. (Fels 1996, p. 74, author's italics).

Fels was referring principally of course to Schumpeter's (1939) two-volume work, *Business Cycles,* which ran to approximately 1500 pages. Snooks' global history trilogy (1996, 1997, 1998b) is of a similar length, and it is paired with a further trilogy on economy theory (Snooks 1998b, 1999, 2000) as well as further applications ranging across the social and life sciences (Snooks 2003, 2007, 2010). It

[1] A tentative foreshadowing might be evinced from Snooks (1994b), as averred by the author in a personal communication.

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seems fair to say then that the attempt to condense Snooks is at least as daunting a task as distilling Schumpeter.

It is to be hoped that a residual benefit of this book will be that the DST is introduced to a new audience to whom this succinct statement may appeal. This may in turn lead to wider use of the DST to further our understanding of both history and the contemporary world while simultaneously helping us make sensible predictions on the future direction of the world economy and the societies within it.

The initial objective of this chapter is to set out the basic parameters of the DST and the most pertinent *Laws of History* (Snooks 1998a) derived from it. This task is performed in Sect. 2.2. A full exposition of the *Laws* comprises Appendix. Sections 2.3 and 2.4 then present an extension, indicating how the high-level concepts embodied in the DST can be applied to the practical question of understanding the cyclical, wave-like rhythm of economic activity observed in the historical record. Section 2.4 introduces a new concept, the *Strategic Alternator*. This extension serves to illustrate the microeconomic basis of the DST and to emphasise the pro-cyclical nature of the interactions between confidence and real-world decision-making.

2.2 The Dynamic Strategy Theory[2]

Individuals are driven by their desire to first survive and then to prosper (Snooks 1996, pp. 84–86; 1998a, b, Chapters 8 and 9). This is the first law of history: the *Law of Human Motivation* (Snooks 1998a, b, Chapter 8). Individuals respond to this material driving force by pursuing strategies that they believe increase their probability of survival and prosperity by distancing themselves as far as possible from subsistence. Hence, they are "strategists" engaged in a material "pursuit" (Snooks 1996, pp. 87–88; 1998a, b, Chapter 11). Ergo, the "strategic pursuit" is the key underlying dynamic mechanism of human society and of life itself (Snooks 2003, Chapter 10).

The aggregate outcome of the strategic pursuit, O, which can be usefully thought of as income per capita in the society under consideration, is a function of physical factors (labour, L, capital goods, K, and natural resources [incorporating idiosyncratic geographical contexts], R), the state of available technology, T, and strategic factors, Φ. This is the strategy function (Snooks 1999, pp. 219–224).[3]

[2]Note that all pro-numerals used in this chapter are included in the "List of acronyms, symbols, pro-numerals, and abbreviations used" in the front matter of this book. Reference back to this listing may assist with reader comprehension as the argument progresses.

[3]The strategy function as originally constituted in Snooks (1999, chapter 12) included a term for economies of scale and the variables in (5). The re-ordering and separation of Snooks' original eight-variable function into an equation system here is justified by the desire to set the strategy function inside a broader and accessible general DST framework. The choice of the capital Phi (Φ) to represent strategic factors is due to its physical resemblance to the two-dimensional model of the strategic logos, this "complex mandala", as described in Snooks (2010, pp. 320–323).

$$O = f(L, K, R, T, \Phi) \tag{2.1}$$

Aggregating all physical factors into a single variable, P, gives

$$O = g(P, T, \Phi) \tag{2.2}$$

The state of available technology, T, is a very high-level concept. In the history of human society, T has so far been represented exclusively by one of three technological states or paradigms: the Palaeolithic (hunter-gatherer), the Neolithic (sedentary agriculture, pastoralism and animal power), and the Industrial.

$$T = (\text{paleolithic}, \text{neolithic}, \text{industrial}) \tag{2.3}$$

Each successive era was ushered in by revolutionary technological change driven from the demand side as the potential of the prevailing paradigm was exhausted. The requirement to pursue discontinuous innovation is intense when a paradigm has reached exhaustion, or the prospect of near-term exhaustion becomes apparent. This point is superficially similar to Schumpeterian conceptions of the business cycle that highlights the clustering of innovations in cyclical troughs and the regenerating power of "creative destruction". The point being made here is a concept of a deeper nature: it relates to profound changes in the very basis of economic activity that alter productive potential at a global level in stepwise fashion (Fig. 2.1). Schumpeter (1934 [1983], pp. 64) understood this concept in terms of disruptive innovation within the contours of modern economic growth—as illustrated by his famous dictum that "[A]dd successively as many mail coaches as you please, you will never get a railway thereby"—but he did not actively consider the implications of this inference for pre-industrial (as opposed to proto-industrial) technological states.

Snooks (1998a, b, pp. 217–218) identified the imperative to pursue discontinuous technological change at a time of strategic exhaustion as a secondary historical law, the *Law of Technological Revolution*. The dissemination of a new paradigm—a state of T—from the innovating to the following regions has been termed the global strategic transition, hereafter the GST (Snooks 1999). As each new society adopts the new way, global potential comes closer to being realised. Equation (2.3) and Fig. 2.1 combine to illustrate the concept of T and the dynamic of GST. Societies operating at the frontier of a technological paradigm, thereby enjoying the highest living standards within the world-system at any given time, are the "strategic core".

The aggregate dynamic strategies employed under these technological paradigms are four in number. They are population growth and dispersion, conquest, commerce, and technological change (Eq. 2.4).

$$\begin{aligned} \Phi = {} & \text{population}, \text{conquest}, \text{commerce}, \text{tech change} \\ & \text{subject to } (P, T) \end{aligned} \tag{2.4}$$

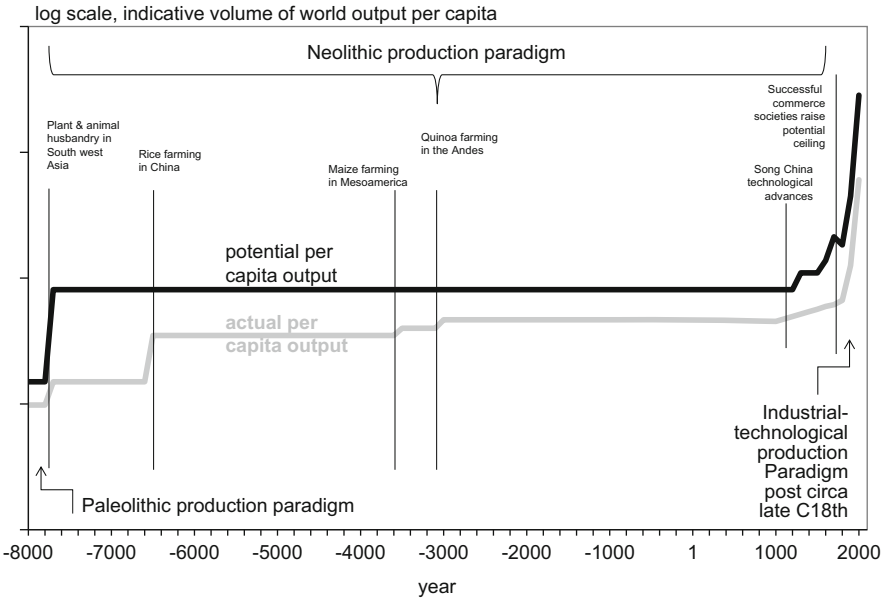

Fig. 2.1 Technological paradigms of human history: The three basic states of *T*. Source: Adapted from Snooks (1996, Figure 12.9, p. 403). Notes: Potential output per capita beyond Year 1 CE is defined as the wealthiest society at each point in time as estimated in Maddison (2009). Actual output per capita is as estimated by Maddison (2009) for benchmark years, with interpolations by the author. Prior to 1 CE, the estimates are the author's own and are designed for indicative purposes only. Note that throughout the paper the secular designations "Before the Common Era" and "Common Era", BCE and CE, respectively, are preferred to BC and AD

Snooks (1994a, b) originally termed the first of these strategies family multiplication. The specific choice of aggregate dynamic strategies is taken with reference to the prevailing physical conditions *P* (incorporating relative factor prices) and the technological paradigm *T*. Note that the relative scarcity or abundance of the component factors of *P* defines the comparative advantages of a society. Critically, it is only in the modern era, after the Industrial Revolution, that technological change has established itself as a viable aggregate dynamic strategy (Snooks 1996, Chapter 9; 1997, Chapter 10), allowing society to break free from the circularity of the eternal recurrence that characterised the Neolithic paradigm and thus dominated ancient and mediaeval thought in the Old and New Worlds.

These strategies may be adopted singly or together to achieve societal ends. One strategy will predominate, and others will serve in a subsidiary role (see Table 2.1). The original strategy was population growth and dispersion. This strategy will also be referred to throughout the study as "family multiplication", which was Snooks' original nomenclature, and it has an adjunct, which is colonisation. The terms are interchangeable. This strategy was the vehicle whereby the human species spread across the globe, progressively bringing the majority of the land mass into habitation, and raising regional and aggregate population levels to the maximum afforded

Table 2.1 Dynamic strategies of selected societies

Society	Epoch	Dominant strategies	Subsidiary strategies
Palaeolithic	1.6 mn years–10,000 BP	Family multiplication	Technology
Aboriginal Australian	Before 20,000 BP	Family multiplication	Technology
	20,000 BP–1788	Family planning	Technology
Sumeria		Commerce/technology	Conquest
Akkadia		Conquest	Commerce
Assyria		Conquest	Commerce
Achaean Greek		Commerce	Colonisation/conquest
Classical Greek		Commerce	Colonisation/conquest
Persian		Conquest	Commerce
Phoenician-Tyre		Commerce	Colonisation
Phoenician-Carthage		Commerce	Colonisation/conquest
Macedonia		Conquest	Commerce/technology
Rome		Conquest	Commerce/technology
Venice and Genoa		Commerce	Colonisation/conquest
North-western Europe	Before 1100 CE	Conquest/commerce	Technology
	1100–1500 CE	Commerce/technology/conquest	Technology
	1500–1760	Commerce/colonisation	Conquest
	1760 onwards	Technology	Colonisation/commerce/conquest
Islam–Arab	Before 1200 CE	Conquest	Commerce/technology
Islam–Ottoman	Before 1500 CE	Conquest	Commerce
China	1066 BCE–221 CE	Colonisation	Conquest
	221 CE–1368 CE	Defence/technology	Family multiplication/colonisation
	1368 CE–1800 CE	Family multiplication	Central control
Meso-America			
Teotihuacan	800 BCE–150 BCE	Family multiplication	Commerce/technology
	150 BCE–150 CE	Conquest	Commerce/technology
	150 CE–750 CE	Central control	Commerce
Mayan	2000 BCE–400 BCE	Family multiplication	Commerce/technology
	400 BCE–500 CE	Commerce/technology	Conquest
	600 CE–830 CE	Conquest	Commerce/technology
Aztec		Conquest	Commerce/technology

Source: Snooks (1996, Table 12.1, p. 396)

Note: The secular terms CE and BCE—Common Era and Before the Common Era—will be used throughout this work, in place of AD and BC. BP signifies "Before Present"

by the Palaeolithic hunter-gather technology in the respective climate zones. Snooks termed this process "The Great Dispersion", which was the first of the GSTs. Conquest and technology played a subsidiary role in the contest for the most desirable lands, with losers left to adopt less abundant territory. The competition for resources was naturally greatest in the most desirable territories, which were geographically positioned on natural migration routes: Snooks' "funnels of transformation" (1996, p. 434). As a consequence of intense competition, the incentive to innovate was also very strong in these areas of great abundance. It is from such zones that the Neolithic revolution sprang. First, wheat and goats were domesticated in South-west Asia [the Levant, through Turkey and the Zagros Mountains of Iran from 7700 BCE]; then rice in China from 6500 BCE; then maize in Meso-America from 3500 BCE; and then quinoa in the Andes from 3000 BCE (Ponting 2001, pp. 57–65).

The initial revolutionary efforts in the agricultural sphere around 7700 BCE raised global potential output per head dramatically in a one-off fashion (the black line in Fig. 2.1). The dissemination of the basic Neolithic meme to each of the world's continents from this point took approximately 4700 years and was completed about 5000 years ago. As the basic Neolithic technology was introduced to, or discovered anew in, each society, there was a corresponding stepwise increase in actual global output per capita (the grey line) in Fig. 2.1, narrowing the distance between potential and actual outcomes globally, given *T*. This process was the second GST in action.

The Neolithic era saw conquest and commerce emerge as viable lead strategies, while population growth and dispersion remained a viable lead for some individual societies, and was a subsidiary strategy in many areas. However, with the advent of the Neolithic technology, its time as a dominant strategy for the species as a whole had passed. The move to sedentary agriculture, urbanism, animal husbandry, simple machines, and animal power made land a more productive commodity than heretofore, allowing both larger and denser populations to be supported and an increasing division of labour in the new urban agglomerations (Modelski 2003).

Under Neolithic conditions the potential income of an individual society could be increased monotonically by conquest—increasing inputs of land, labour (frequently slaves), and animals—and/or by commerce—with greater specialisation allowing for the generation of commodity surpluses and the potential for rent extraction from the monopolisation of trade.

Prosperity through conquest was essentially a zero-sum process, with no material change in global potential as land and labour changed ownership or residence. Prosperity through commercial rent extraction was likewise a zero-sum activity—although there are of course genuine aggregate gains from trade, through the increased productive potential that comes with specialisation, which are truly positive sum.

Global productive potential per capita was close to static for long periods under the Neolithic paradigm. World real GDP per capita in 1990 international dollars was estimated by Maddison (2009) to have declined slightly between 1 and 1000 CE (a compound annual growth rate of –0.003%) and increased modestly between 1000 and 1500 CE (a compound annual growth rate of +0.045%). For the full period for

which consistent data are available and basic Neolithic technology held undisputed sway—from 1 to 1700 CE—the rate of expansion in world real GDP per capita was a meek +0.0163% per annum, producing a 32% cumulative gain in living standards. Such slim growth rates reflect relatively static underlying technological conditions, with some fine-tuning, and their corollary, glacial changes in productivity levels.

Global potential was held back by the underlying technological limitations. Some individual societies were, however, able to do better than others, albeit temporarily, with a successful application of the redistributive strategies of conquest and monopoly commerce. Indeed, a number of historical studies have depicted periods of sustained economic growth, or its co-requisites, at the societal level, with some notable examples being Norman England (McDonald and Snooks 1986) and Song China (Elvin 1973).

In the Maddison database, periods where rates of economic growth have been estimated to exceed the global rate by a considerable margin under the Neolithic paradigm include the following conspicuously successful societies: West Asia between 1 and 1000 CE; China between 1000 and 1500 CE; the Italian city-states between 1000 and 1500 CE, with Western Europe a little way behind the Italians but still well above the global norm; and the Netherlands between 1500 and 1700 CE, followed closely by the UK and Spain. If such data was available from prior to 1 CE, it would no doubt show conspicuous, if temporary, gains for conquest societies in Mesopotamia, Egypt, Persia, certain Greek city-states, and Rome, and temporary commerce strategy "winners" among certain Greek city-states, Egypt again, Phoenicia, and Carthage (see Table 2.1 for a strategic taxonomy covering a number of these societies). One can certainly trace the fluctuating size of the land areas of conquest empires as a proxy for economic expansion at the societal level (Taagepera 1978). The important point is that the individual desire to survive and prosper is not constrained by a static level of potential global output: a redistributive-extractive strategy can serve just as well for the individual agent or group, and has done so throughout human history—right up to the kleptocracies of today.

The final strategy in Eq. (2.4) was also the last to be exploited by human society as a dominant strategy, although it was an important subsidiary strategy in multiple instances (Table 2.1). The Industrial Revolution in Britain was the first major instance of a society successfully adopting a strategy of technological change as the dominant force for its prosperity.

Societies engaged in the strategic pursuit face a hierarchy of decisions on the mix of strategies in Eq. (2.4) that will best serve their interests given the umbrella technological setting (as in Eq. 2.3), and the resources they can command to advantage. This involves defining a primary means of pursuit; how to best apply subsidiary strategies to maximise the effectiveness of the primary vehicle; and ongoing judgements regarding the best *sub-strategies* to execute within this overall framework. The term "sub-strategies" should be understood to describe how societies approach T in a practical sense through time.

Decisions on sub-strategies, individual projects, and enterprises and institutional design (see Eq. 2.5 below) are all taken within that aggregate context. Which military adventure offers the best risk–reward trade-off? What trade route is the

most lucrative to seek to monopolise? Must a society attain the ability to project force to defend a trade route? What is the best mix of land and sea forces to complement one's commerce? How can one best commercially exploit a recent conquest? What sort of education system is required to build the labour force that the strategy demands? What political framework and what degree of openness to trade, finance, migration, and social mobility will be most efficient in supporting a society's strategic mix?

The nature of Φ thus determines the state of strategic socio-political factors—institutions, organisations, and leadership (capital S with subscripts I, O, and L, respectively)—that prevail in a society. The *Fundamental Law of Institutional Change* (Snooks 1998a, b, pp. 233–234) is that all institutions and organisations in a society change in response to the unfolding and changing of the dynamic strategy and its associated sub-strategies. The nature of Φ thus determines the desired form of political organisation, the expectations of elite and non-elite behaviour, societal attitudes to external interaction, internal mobility, and the role of ideology (encompassing, but not limited to, religion).

$$S_I, S_O, S_L = h(\Phi) \tag{2.5}$$

Strategic sequences are not pre-determined. That historical fact, allied to the implications of Eq. (2.5), is a fundamental challenge to linear progressive views of institutional change. The observed reversibility of institutional "progress" (usually summarised as "democratisation") in societies that change strategic direction towards conquest from either commerce or technological change—the examples of ancient Greece during the fifth century BCE, Venice in the fifteenth century CE, and twentieth century fascism in Europe and Japan stand out in this regard—indicates that the weight of history is against universal progressivism. Further, with institutional change subject to the demands of strategists, who design institutional frameworks that meet their needs in the most efficient way (Snooks 1998a, b, pp. 237–238), theories that ascribe a *catalytic* role to institutions in determining economic change (North 1990; North & Thomas 1973) and the success or failure of nations (Acemoglu & Robinson 2012; Olson 1982) are also fundamentally challenged by the direction of causation in Eq. (2.5).

With specific reference to the political regime that pertains in any society in the modern era, Snooks (1998a, b, p. 234) states, "The Law of Democratisation has a Janus-like structure: the first form states that all institutions and organisations in the modern era will become increasingly democratic as the technological strategy unfolds; and the converse form states that all institutions and organisations in the modern era will become increasingly undemocratic with any retreat from (or re-folding of) the technological strategy".

Data presented by Roser (2015) argues that both the majority of independent countries and the majority of the world's population now operate or reside under democratic political regimes. Note that the existence of China makes the distinction between population and a nation-state a non-trivial one. That compares to a small minority on both measures at the opening of the industrial era. Discretionary

participation in the modern GST, characterised by a dominant strategy of technological change, has produced more open, pluralistic societies.

The partial endogenisation of institutions (Greif and Laitin 2004) within a game theoretic framework is an advance on the non-Snooksian approaches referenced above, as it is a step beyond orthodox supply side thinking, where institutional change is generally exogenous. This school has developed the concept of "quasi-parameterisation" to address "a central concern of political science today—viz. how to explain both institutional stability and change" (Greif and Laitin 2004, p. 634). Further, "Because changes in quasi-parameters and their implications are not recognised by the actors, we have to consider them as parametric—exogenous and fixed—in studying the self-enforcing property of an institution in the *short run*, but we have to consider them as endogenous and variable when studying the same institutions in the *long run*" (Greif and Laitin 2004, p. 639). The idea of self-reinforcing feedback loops, which plays a central role in the quasi-parametric approach, is also central to the concept of the *Strategic Alternator* model introduced in Sect. 2.4. The key difference between the two approaches is that the DST system views institutions as endogenous over all time horizons, where they are dependent on, and responsive to, the strategic growth process, whereas Greif and Laitin (2004) view institutions as endogenous only in the long run while endowing them with independent catalytic properties.

The material success of strategic choices will determine the state of strategic confidence (S_C) that prevails in a society. This is the force that binds the individuals in a society together in cooperative ventures that fulfil their desires to survive and prosper. The *Law of Social Cohesion* (Snooks 1998a, b, pp. 236–237) posits that societies will only cohere while a viable dynamic strategy is being pursued. It is the belief in the viability of the strategic mix, headlined by the dominant dynamic strategy, that creates and sustains strategic confidence. Societies that are more confident and less anxious will take more risks, and these risks will be ultimately remunerative on net if the aggregate degree of confidence is fundamentally sound. This is a self-perpetuating positive feedback loop. However, these forces can just as easily operate in the opposite fashion, generating a recursive negative dynamic.

Strategic viability is summarised by the level and change in O and by developments in strategic inflation and the price level ($\dot{S}_p$, with S_p indicating the level of prices, not the rate of change). Strategic prices reflect the balance of pressures created by the unfolding of strategic demand (S_D) and the ability of the physical and innovation systems ($\dot{T}c$ to differentiate between incremental change and the umbrella paradigm) to cope on the supply side, in addition to monetary factors (M). Monetary factors are neutral if policy settings are appropriate to the other conditions in Eq. (2.7); inflationary if policy is set too easily; or disinflationary/deflationary if too restrictive.

Prices emit signals on the differential rewards available from competing activities, conditioning the dynamic of strategic imitation. Strategic imitation describes the activity whereby followers seek to replicate the most visibly remunerative efforts of innovators. This serves to allocate resources to pro-strategic pursuits, and increases

the demand for fixed assets and skills allied to the strategy. It also drives first-mover profits down as competition from latecomers increases.

A historically successful and not yet fully exploited strategy will be characterised by consistently positive overall price changes, as $\dot{S}_{\mathrm{p}}$ is a positive function of economic growth over the long run (Snooks 1998b, Chapter 11). The corollary here is that the accumulation of flows implies that the price level is a positive function of O.[4]

$$S_{\mathrm{C}} = i\left(O, \dot{O}, S_{\mathrm{p}}, \dot{S}_{\mathrm{p}}\right) \tag{2.6}$$

$$\dot{S}_{\mathrm{p}} = j\left(S_{\mathrm{D}}, P, \dot{T}c, M\right) \tag{2.7}$$

$$S_{\mathrm{p}} = k(O) \tag{2.8}$$

An exhausted strategy will produce outright strategic deflation as the marginal revenues from pursuing the strategy fall below its marginal costs, pioneers abandon the strategy, imitation drives a rush for the exits, and the prices of fixed and financial assets linked to the exhausted strategy will decline sharply, while goods and services inflation will turn negative.[5] It is important to emphasise that a very large impulse in M (see Eq. 2.7 above) is required to forestall deflationary dynamics if strategic confidence is very low due to the perception of strategic exhaustion. The dramatic increase in the size of the balance sheets of the central banks of the USA, the Eurozone, and Japan in the wake of the global financial crisis of 2008/09, a policy deemed necessary due to the dramatic decline in confidence levels, occurred in tandem *with* very low rates of economy-wide inflation. This recent real-world example testifies eloquently on this point.[6]

Pure anti-strategic societies—those that choose to divorce themselves from the GST, thereby shielding themselves from both external competition and unfettered price signals—are candidates for destructively high inflation from incoherent policy frameworks or static/falling prices derivative of weak or falling productivity growth due to an absence of competitive pressures. Or they may swing from one to the other as the elite attempts to steer the dynamic engine of society with the clumsy tools of

[4] Chapter 11 of Snooks (1998b) outlines the long-run empirical relationship between inflation and economic growth in successful societies going back to the late Middle Ages. That length of time period shows that the relationship is a general phenomenon, not a specific one related solely to the post-Industrial Revolution world.

[5] Nominal wage rigidity tends to limit the scale of goods and services price deflation in the contemporary world. If nominal wage flexibility holds, goods and services price deflation may achieve a peak to trough movement closer in scale to the decline in asset prices, such as in the Great Depression.

[6] Monetary and fiscal expansions during the 2020/21 pandemic have exceeded those of 2008/09 in scale, and the prices of many natural resources have increased markedly as economic activity rebounded from forced lockdowns. The ex ante conditions for the pandemic recession and the global financial crisis are, however, extremely different in terms of balance sheet vulnerability and general fundamentals relevant for confidence.

fiat. While such societies remain outside the GST, they will never achieve the combination of long-run self-sustaining increases in O and S_p that characterise strategically successful societies. Transitioning away from an anti-strategic stance and towards the GST is a threatening time. Some succeed in accomplishing this transition effectively—China since 1978 being a conspicuous example—while others, such as the USSR, collapse in the attempt. The degree to which a society's anti-strategic framework has distorted price-based feedback and incentive mechanisms, allied to the speed with which the framework is unwound—big bang versus gradualism or dual-track—are critical conditioning parameters for the success of such transitions (Snooks 1997).

The discussion in Chap. 6, where the economic performance of the People's Republic of China during Mao's lifetime is considered within the DST framework, will refer back repeatedly to the concept of anti-strategic policy and its fundamental incoherence. In terms of the *Laws of History*, most are caveated by the phrase "In open societies. . ." (see Appendix). Anti-strategic societies are not open, and thus any law so caveated does not apply to them. The key fundamental law relating to anti-strategic societies is the *Law of Anti-strategic Political Collapse*. This states that any society that is both subject to competition and is led by a group of anti-strategists, who exploit non-strategists and oppress strategists, will eventually collapse. Such systems are incapable of internal reform, as rent-seeking constantly re-asserts itself (Snooks 1998a). The violent resistance of anti-strategists to openness in all its forms implies an innate understanding of this principle.

The formal conditions of current strategic success, or its unhappy counterpoint, are defined at the margin, and set out in Eqs. (2.9)–(2.12).

$$\frac{\partial O}{\partial t} = \frac{\partial S^R}{\partial t} - \frac{\partial S^C}{\partial t} \tag{2.9}$$

$$\frac{\partial S^R}{\partial t} - \frac{\partial S^C}{\partial t} > 0 \tag{2.10}$$

$$\frac{\partial S^R}{\partial t} - \frac{\partial S^C}{\partial t} \leq 0 \tag{2.11}$$

$$\frac{\partial^2 O}{\partial t^2} < 0 \tag{2.12}$$

Equation (2.9) simply states that the marginal benefit of a strategy is the difference between its marginal revenues (S^R) and marginal costs (S^C). Equation (2.10) sets out the basic condition for strategic viability, which is a positive marginal return (revenues minus costs), or societal profit or surplus. Equation (2.11) states the necessary but not sufficient condition for exhaustion/non-viability, which is a marginal return at or below zero. If Eq. (2.11) holds, and so does Eq. (2.12), then the point under observation is identified as a maximum, thus confirming the strategy in question is exhausted. If Eq. (2.11) holds but Eq. (2.12) does not, then the point

under observation is not identified as a maximum, thus indicating that the strategy in question may not be exhausted despite a temporary lack of a return.

That is easy enough to define in the abstract, or with the benefit of hindsight in the real world. Whether a lack of positive strategic returns in any particular period signals exhaustion or merely some cyclical/transitory influence can be extraordinarily difficult to assess in the real world in real time. Strategists are confronted by such fundamentally vital but uncertain decisions whenever marginal returns slow or decline. For example, in the European context in the early 2010s, policymakers and private actors were confronted with a strategic decision matrix that had multi-generational consequences: bail out the likes of Greece within the confines of the Euro system? Or allow exits from the common currency bloc to allow for (large) nominal exchange rate depreciations, with unpredictable consequences for both debtors and creditors across multiple fronts?

Whenever an economy experiences a protracted period of stagnation, or outright recession, the question of strategic viability becomes pertinent. A heightened degree of uncertainty at such times undermines strategic confidence. This will be temporary if the "downturn" proves to be merely cyclical, or more permanent (quasi-permanently from a sovereign nation's perspective, concretely permanent for "lost generations" of individuals whose lifetime earnings are irreparably damaged) if the problem is one of strategic (sub-strategic) exhaustion. The longer a downturn endures, the more likely it becomes self-fulfilling through recursive negative feedback loops.

2.3 An Extension: The Cycle and Strategic Confidence

The DST can be formally extended to account for the wave-like history of O under the industrial paradigm—and economic fluctuations at all frequencies under all forms of T. The key concept is that of strategic confidence: the confidence of individuals in the ability of the prevailing system to meet and further their desire for survival and prosperity. Strategic confidence is thus the mortar that allows societies to cohere. When the entrepreneurial agents in a society perceive that the aggregate strategy is successful and wealth-enhancing, and is therefore consistent with their desires, they will be confident pursuing projects related to it. Equally, the suppliers of finance (both the agents who produce the savings and the intermediaries that allocate them) will be eager to contribute to the funding of such projects.

The principal observational evidence that builds confidence is increasing asset prices and rising investment returns related to the profitability of individual pro-strategic projects. In each successive period, confidence will build further while asset values appreciate and profitability is maintained. Individual and collective surpluses rise and savings increase. More credit becomes available and more projects are deemed viable, as "agency costs" decline (Bernanke and Gertler 1989) and collateral values and net worth rise (Bernanke and Gertler 1989; Kiyotaki and

Moore 1997).[7] The stock of real and financial assets—wealth—will increase in both absolute terms and relative to flows of income. The society's command over resources will rise, raising living standards in a virtuous circle. Under such circumstances, the basic individual desire to survive and then to prosper is being strongly met.

If, on the other hand, a strategy is perceived to have exhausted itself and agents are thus bereft of confidence, then a recursive downward spiral is likely to take hold. If confidence is scarce, then so too will be the number of projects deemed likely to be profitable, as there is no aggregate anchor for micro decision-making under the pervasive uncertainty. The availability of external financing for new projects will decline as agency premia rise (Bernanke et al. 1996) and even the refinancing of existing projects will come into question (Caplin et al. 1993). Asset prices will fall, driving wealth down and devaluing collateral (Kiyotaki and Moore 1997), which will trigger margin calls and forced selling ("fire sales") that will accelerate the downward spiral (Fisher 1933). Aggregate activity levels—income generation—will contract and society's command over resources will decline, lowering living standards absolutely. This decline makes existing debt service obligations exceedingly onerous, driving a desire to sell or write off assets related to the exhausted strategy/sub-strategy and "deleverage" (Devlin and McKay 2008), which reinforces the existing deflationary impulse. The absence of confidence can precipitate panic in financial relations and a deep contraction in the real economy.

When panics do take hold, policymakers (the strategic leadership) must decide whether to support strategic confidence by increasing M (see Eq. 2.7) and to invest in pro-strategic infrastructure in their own right to both support O and signal their own confidence in underlying viability. If, however, policymakers feel that the situation is one of underlying exhaustion, it would be wrong to expend resources supporting the outgoing model, which would both waste scarce resources and may provide an errant signal on underlying viability. Rather, it is preferable to direct its own resources to the kind of basic research activities that will eventually bring forth a replacement strategy, while signalling that private actors should do likewise, and assisting with their attempts. Such efforts come without guarantees of course, but they offer the only potentially sustainable path back to strategic success when exhaustion is confronted.

In sum, the presence or absence of strategic confidence determines whether the forces in a society are operating in a centripetal or centrifugal manner.

It is only at times of ultimate strategic exhaustion and societal collapse that strategic confidence will fall to zero. In all other situations we are interested in the degree of confidence prevailing at a given point in time and how this influences tangible outcomes. Strategic confidence may register anywhere along a spectrum from microscopic to macroscopic levels. Societies registering at the microscopic end

[7] A survey of the attempt to incorporate financial frictions into macro-econometric system models following the GFC, highlighting the contributions of the two schools cited in this sentence, is available in Hall et al. (2013, pp. 19–30).

of the spectrum include newly strategic societies still full of trepidation about the new path they have embarked upon as they are yet to feel the benefits of the new way. An economy in the painful adjustment phase of a transition away from command planning is one example. A society dealing with the destabilising impact of opening itself to global trade after a prolonged period of autarky is another. Societies experiencing stagnation or recession under the rubric of a mature strategy where there is great uncertainty about the future potential of the old way are another (Japan and certain European countries today). Societies that have just lost an armed conflict in a humiliating fashion, where their self-perception of economic and military competence is shattered, will naturally be low on strategic confidence. Such societies are apt to fall prey to centrifugal internal forces (the outbreak of multiple serious rebellions in late Qing China is a prime example).

Macroscopic readings would be taken in conspicuously successful societies pursuing long-run strategic pathways that have both strong flows of income and a large accumulated stock of wealth (and/or territory) to measure themselves (say Rome circa 100 CE, Venice circa 1400, the Dutch Republic circa 1650, Britain in the late Victorian era, Prussia under Bismarck, Japan circa 1988, or the USA circa 1960 and 1999).

2.4 The *Strategic Alternator*: The Microeconomic Operation of the Dynamic Strategy Theory

The foregoing discussion described strategic confidence as the fundamental underlying pro-cyclical force in the economy. It is the historical, contemporaneous, and ongoing viability of strategies that defines the state of confidence. Strategies (and their associated sub-strategies) unfold along a lifecycle-like path. Following their inception, strategies accelerate rapidly while utilisation rates are low; the growth rate decreases as the strategy matures, ahead of the plateau that precedes exhaustion. Each phase contributes to fluctuations in strategic confidence along the way. The life span of strategies and the cycles in O that they drive are not, however, of predictable duration.[8] The following discussion outlines this dynamic in a formal way. A new concept, the *Strategic Alternator*, will be introduced to illustrate how the fundamental concept of strategic confidence produces fluctuations in economic activity. This section thus provides a microeconomic complement to the high-level statement of the DST presented up to this point of the book.

[8] Long wave theory continues to attract proponents across many fields of the social sciences, but the veracity of the underlying concept—that there is a predictable rhythm to economic life centred on cycles of 50–60 years in length—has been rightly questioned (Solomou 1990). The works of Mandel (1995), Freeman (1996), Berry (1991), and Goldstein (1988) offer good summaries of the existing literature and a range of competing hypotheses on the drivers of the phenomenon in prices, output, or both.

Why use the term "alternator"? An alternator is an electrical generator commonly used in internal combustion engines to convert mechanical energy into electricity in the form of alternating current (AC). The electricity is generated by rotating magnets and the energy delivered as AC takes the form of a sine wave. The current also periodically reverses its direction of flow, in contrast to direct current (DC) systems. The strength of this analogy with regard to the pro-cyclical dynamics of the system described below will become clear.

The *Strategic Alternator* must not be confused with the existing concepts of the multiplier and/or the investment accelerator and/or the financial accelerator. The author considered using the term *strategic accelerator* for this concept, but the risk of confusion seemed too great, while the term alternator was ultimately judged to better encapsulate the dynamics at play. The concept of a macroeconomic "multiplier" can be traced back to the work of Kahn (1931), Meade (1933), and Keynes (1936). The concept of an investment "accelerator" is associated with Clark (1917), Kahn (1931), and Hicks (1937). A merger of the two concepts was formally outlined by Samuelson (1939). Both are arithmetical concepts that relate an initial exogenous impulse in activity to future rounds of expenditure. Neither is a dynamic or autogenic theoretical process, and the rigidities associated with them, together with the large-scale disagreement on their empirical underpinnings and thus their practical application, have seen them fall into disuse since the 1970s (Blanchard 1981). Bernanke's financial accelerator (Bernanke and Gertler 1989; Bernanke et al. 1996, 1998) is closer to the dynamics encapsulated by the *Strategic Alternator*, but it too relies on exogenous impulses to set it in motion, and it is explicitly designed to sit within conventional macroeconomic models. The financial accelerator will be revisited below.

Akerlof and Shiller (2009, pp. 14–18) have put forward a concept that they label the "confidence multiplier" in their critique of orthodox economics published in the wake of the global financial crisis (GFC). Their joint book on the subject is entitled *Animal Spirits*, in a transparent nod to Keynes. A "confidence multiplier" may appear to be a close cousin of the concept of a *Strategic Alternator* that is driven by strategic confidence. Akerlof and Shiller seek to put this multiplier into the front line of analysis. Their observation—that confidence and its feedback effects have a material influence on economic outcomes—is clearly in sympathy with this work. However, Akerlof and Shiller view their multiplier as an insertion that would improve the existing theory, not the foundations of a new one that can replace the old. Both scholars have been qualifying the hard assumptions of the orthodoxy—pure rationality, symmetric information, and efficient markets (Akerlof 2009; Shiller 2005) for some decades. Both have utilised a mixture of theory and insights from behavioural social science to build their critiques. Yet they have not taken their critiques to the logical conclusion, which is to build a general dynamic theory to replace the orthodoxy that they find so underwhelming in explanatory power.

What follows might be considered to be a joint function of the genius of Snooks, the spirit of Keynes as extended and interpreted by Minsky (1984) and Akerlof and Shiller (2009), with a nod to the elegant dynamics embodied in Bernanke et al. (1996, 1998).

A strategic (or entrepreneurial) agent must continually make decisions on the initiation and extension of projects that offer various perceived risk–reward trade-offs. To execute a project, strategists bring together a mixture of fixed and variable inputs. In each period, production is constrained by the stock of existing fixed assets at the entrepreneur's disposal from past investments and the net combined call on internal and external funds to purchase variable inputs, less any investment in additional fixed assets for use in future periods.[9] Internal funds are liquid assets (retained earnings held as cash and callable financial assets) net of existing liability service obligations. External funds are new borrowings net of refinancing.

The term "project" is defined broadly. In this system, the project may be the production of consumer durables for sale to downstream retailers; it may be the hiring of a skilled workforce to enable the provision of a technical service to business; it may be a medical research initiative; it may be a raid on a village; it may be a decision to migrate; it may be the construction of a railway; it may be the planting of a crop or the extension of a mine. The specific detail of the type of activity does not matter at this point. What matters is that the activity must be related to the demands emanating from the strategies or sub-strategies of the society concerned. In other words, the decision-makers are responsive to strategic demand and are informed by the state of strategic confidence. A terrorist attack does not meet this definition, being fundamentally anti-strategic, whereas a military expedition that seeks to secure a trade route afflicted by those same terrorists would certainly meet the definition.

Fixed inputs are denoted Z and variable inputs v. Subscripts 0 and i denote legacy and contemporary variables, respectively.

Going into the decision-making process, Z_0 cannot be altered for productive purposes in period i, [although depreciation of the existing capital stock and purchases of new capital stock are accounted for in Eq. (2.13) through Z_i] so we are interested in the amount of v_i that can be commanded by the project to generate income equal to the product of Z_0 v_i.

$$v_i = \alpha(\mathrm{la}_0) + b_i - r_0 b_0 - Z_i \tag{2.13}$$

In Eq. (2.13), la_0 are the agent's own liquid assets, which can be usefully thought of as retained income generated by previous projects, α is the proportion of la_0 the agent is willing to devote to the project, b_i are new borrowings in the period, and $r_0 b_0$ is the cost of servicing existing liabilities, r being the interest rate.[10] The final term, Z_i, denotes funds devoted to acquiring additional fixed assets for delivery and use in

[9] Productivity changes—output not accounted for directly by the quantum and quality of inputs—will contribute to the final outcome, but they are assumed to be minor enough from one period to the next to be excluded from explicit consideration in this simplified framework.

[10] For a firm with debt and equity liabilities, this would be the weighted average cost of capital (WACC). To maintain a high level of generality, interest rates will proxy for the total cost of servicing liabilities.

future periods.[11] Therefore, Z_i is a one-for-one constraint on current potential output, as it diverts resources away from the purchase of productive variable inputs for the immediate project. The first instalment payable on any new borrowings is assumed to come due in the next period and any lump-sum repayments are credited at the same time.[12]

This schema implies that relative to prior projects, more variable inputs can be purchased where some combination of the following occurs: α increases, b_i increases, r_0 declines, the two stock variables move favourably ($b_{0\downarrow}$, $la_{0\uparrow}$), or less investment in fixed assets for future use is undertaken. Abstracting from the stock variables, and observing that the individual agent is likely to be a price-taker where interest rates are concerned, and noting the fact that consistently lowering investment on fixed assets to finance the purchase of current variable inputs is an unsustainable approach in the medium term, the most promising avenues for expanding immediate productive activity are through mobilising more internal funds (an increase in α) and accessing more external finance (raising b_i).

The proportion of the agent's own liquid assets that they are prepared to devote to the purchase of variable inputs will depend upon their experience with the success of similar projects in the past, the attractiveness of alternative uses for this capital (including investments in Z for future use), and the perceived need to reserve liquidity for other immediate and future purposes. These factors will all be influenced by strategic confidence (as in Eq. 2.6), which is in turn driven by the state of incomes and asset prices: their level and recent rates of change. Focusing now on tangible measures at the microeconomic level, we arrive at the following proxies: historical income generation from like projects and the performance of the economy and relevant prices in recent past periods.

$$\alpha = m\left(Z_0 v_0, \dot{O}_{t-1\rightarrow -n}, \dot{S}_{p,t-1\rightarrow -n}\right) \tag{2.14}$$

Further, note that

$$0 \leq \alpha \leq 1 \tag{2.15}$$

It is most unlikely that the extremes in Eq. (2.15) would ever be realised in practice. It is unlikely that an agent would have absolutely no other liquidity

[11] It has already been stated that depreciation of Z_0 is accounted for in the Z_i term. It also represents any lump-sum payments or buybacks to reduce liabilities: i.e. use of la_0 to reduce b_0. This decision would be reflected in a lower value of α in addition to a higher value of Z_i.

[12] This system is calibrated to the conditions prevailing after the Industrial Revolution, where formal financial intermediation has come to dominate. Even so, the structure could accommodate a non-monetary or informal credit mechanism if required. For example, in a Neolithic conquest environment, the commitment of one's own potential military resources not included in the standing armed forces (the standing proportion is Z_0) could replace the liquid assets term and the new borrowing term could be replaced by the purchase/mobilisation of military resources from non-aligned and allied jurisdictions.

requirements during a period, allowing α to attain unity. Equally, it is unlikely that an agent would see value in a project and they decide that they will not devote any of their own liquidity to it, allowing α to be zero.[13] Below, it will be argued that the value of α also serves as a signal to prospective lenders on the agent's level of confidence in the project. Ergo, an extremely low or zero value for α may potentially place some constraints on access to b_i, therefore limiting the scale of activity that would be possible.[14]

Turning now to the agent's ability to procure external finance, which critically depends upon the value of collateral that can be furnished (Singh and Stella 2012), for lender j we have

$$b_{i,j} \leq \delta_j \left[\Psi_j((q_i k) + (\mathrm{la}_0 - \alpha(\mathrm{la}_0) - r_0 b_0)) + \Psi_j(E(Z_i v_i)) \right] \tag{2.16}$$

where k is the volume of fixed and illiquid assets owned by the borrower, q_i is the current market price for this basket, and δ_j is the discount applied by the lender to the current market valuation. The middle term of Eq. (2.16) represents liquid assets not already allocated to other purposes (cf. Eq. 2.13). The final term represents the expected income stream from the project scaled by the lender's claim on such income. Ψ_j is the seniority of lender j's claim vis-à-vis other creditors, which is relevant to both future income streams and the firm's existing assets. This term will be more (less) important to the lender's calculations the less (more) established is the agent's reputation. Good repute will emanate from an historical ability to generate healthy flows of income and to have been observed comfortably servicing past financial obligations. In Minskian terms, borrowers of strong repute are those that have been observed to operate within respectable margins of safety for a considerable period of time (Minsky 1984). Indeed, borrowers in this category tend to be able to access unsecured financing in large scale, rendering the first term of Eq. (2.16) redundant. This category of borrower will be set to one side as a special case.

Essentially, Eq. (2.16) implies that the ceiling for new borrowings from each separate financier is the sum of the lender's assessment of the value of fixed and illiquid collateral furnished plus appropriately netted liquid assets all scaled by the seniority of the creditor's claims on future income. To aggregate those decisions

[13] It is possible, even probable, that situations could arise where la_0 may equal 0 (such as if a poor child who happened to be a mathematics prodigy invented a software programming language that a venture capitalist tried to monetise), rendering α redundant. Further, there have been many phases in economic and financial history when investment has been undertaken with extremely high leverage ratios, where invested capital from the speculator's own resources was trivial, although not actually zero. The LBO junk bond boom in the 1980s is one example (Chancellor 1999, chapter 8) while the "vendor-finance" model that drove the South Sea equity bubble allowed investors to run enormously leveraged bets.

[14] An exception to this rule would be in states where S_C is extremely high and agents wish to spread their resources across a multitude of projects, all of which are deemed equally profitable, and the suppliers of credit are in agreement. This would see a dramatic rise in leverage across the system and would be consistent with the formation of a credit bubble if asset price expectations became unanchored from the real economy. See Eq. (2.18a) for the perspective of the lender.

across all lenders, we merely sum the result of each separate negotiation, with the Ψ terms reverting to unity.

The key dynamic element in the determination of b_i is clearly δ. We must therefore investigate the characteristics of δ more closely.

$$\delta = u\left(S_C, q, \dot{q}_{t-1 \to -n}, S_p, \dot{S}_{p,\, t-1 \to -n}, \alpha\right) \tag{2.17}$$

$$0 < \delta < 1 \tag{2.18}$$

in normal states

$$\delta \geq 1 \tag{2.18a}$$

where Eq. (2.17) is highly supportive

$$-1 \leq \delta \leq 0 \tag{2.18b}$$

where Eq. (2.17) is highly unsupportive

Equation (2.17) posits that the degree to which a lender discounts[15] the market valuation of a firm's fixed and illiquid assets in their deliberations is a function of strategic confidence, and the level of and recent history of change in general (S_p) and specific prices (q), alongside the observed commitment level of the borrower (α).[16] The level of prices is a proxy for perceptions of valuation (prices may be deemed to be at, above, or below fundamental or "intrinsic" levels), and the change represents the momentum in the price, which can influence short-term decision-making independent of impressions of underlying value (Hirshleifer 2001; Stracca 2004).

So, the decisions of borrowers and lenders are dependent on their levels of confidence in the project at hand, which is informed by project-specific parameters (as in Eq. 2.16) and by the broader setting of the state of economy-wide confidence plus perceptions of asset valuations. It is thus through δ that macroeconomic influences enter into microeconomic lending decisions. It is also through δ that a borrower's own personal commitment to the project—how much "skin" they are willing to commit to the game—is assimilated into the lender's thinking (via Eq. 2.17).

The observable macroeconomic data that inform these judgements are the recent movement in strategic asset prices (a proxy of recent and current success) and their level (a proxy of the historical success of aggregate decision-making). *Critically, the*

[15] A note on the use of the term "discount": the "discount" applied to the face value of an asset determines its implied yield on maturity. The "discount" applied to a future stream of income payments determines their present value. It is the former usage that is relevant in this context.

[16] While this value will incorporate the lender's assessment of any transaction costs that might be incurred in realising the value of fixed and illiquid asset by their sale, it is assumed to be a small, near trivial component of the ultimate value of δ.

circularity of this decision-making loop implies a basic pro-cyclicality of credit demand, credit supply, and economic activity in the aggregate.

The δ variable is the central element of the alternator system as it synthesises the multifarious information on the key issues entering the decision-making loop. While δ generally takes a value between 0 and 1, as in Eq. (2.18), it can become negative during a period of evaporating confidence and consequent outright deleveraging (Eq. 2.18b) or it may exceed unity (Eq. 2.18a) if confidence is at a very high pitch. A negative value would imply no new lending *and* an unwillingness to refinance maturing loans and the calling in of outstanding loans where possible.[17] This combination of circumstances would assuredly lead to a contraction in economic activity, as not only would productive agents have to service outstanding debts; they would be forced to deploy their own assets to pay down the stock, severely limiting their ability to purchase variable inputs—and that means an increase in the unemployment of labour and capital resources, a sharp decline in the price of the latter, further collateral calls, and so on in a downward spiral.

Compounding the difficulties of the borrower and heightening the risk aversion of the lender is the fact that if a negative value for δ held, internal consistency implies that the lender will have at best very modest expectations for the future income stream of any project. The lender may only supply funds under these circumstances where Ψ is unnaturally high. Here one thinks of the seniority conditions demanded by the pan-European public bailout funds in their 2010 agreement with the Greek government. In conventional financial accelerator frameworks (Bernanke et al. 1996, 1998; Bernanke and Gertler 1989) this would be expressed as a prohibitive increase in the "agency premia" faced by borrowers.

At the other extreme, when confidence is "unshakeable" (i.e. Eq. 2.18a holds), the lender will be of a mind that the collateral of the borrower is significantly undervalued and will thus have high conviction that there will be future real capital gains to be enjoyed on these assets. When the first term in Eq. (2.16) looks very attractive, internal consistency argues that the last term, that of expected future income, will also be bullishly perceived. Negotiating a preferential Ψ will therefore be a low priority for the lender who may also fear such action would see them missing the opportunity. The lender will be more than willing to fund the project based on their optimistic views on collateral value and project success—and they are likely to also fund similar enterprises if they can be found. Credit supply for projects related to the strategic orientation of the society will be abundant under such circumstances.

The foregoing discussion should make clear that as δ fluctuates it is able to generate, in the abstract, a wave-like time path for economic activity. The smoother the variations in δ, the more like a sine curve the performance of the abstract

[17] Covenants in loan contracts are often triggered when asset prices are falling. A threshold level of the stock price of the borrowing firm is a common metric that gives the lender the power to withdraw or renegotiate. Another is a credit rating downgrade. Once again, it will be the state of strategic confidence at the time of the deal that determines the generosity of contract language and/or the bias towards the interests of the lender or the borrower.

economy will look. The more abrupt the changes in δ around cycle extremes, the more the performance of the abstract economy will look like a saw-tooth wave.

The analysis has up to this point outlined a formal system that placed strategic confidence at the centre of microeconomic decision-making and the resultant macroeconomic outcomes. The theory shows that varying levels of confidence in the strategy at hand, observable in the performance of asset prices and income growth at the macro level, and in the success of individual projects at the micro level, each of which is quantifiable at the margin, will produce pro-cyclical impulses in aggregate economic activity. These impulses operate through fluctuations in requited credit demand, which drives fluctuations in the demand for variable inputs, which drives fluctuations in aggregate resource utilisation. These dynamics are not self-correcting, equilibrating, counter-cyclical, or automatically stabilising. They are circular, centrifugal, pro-cyclical, and thus fundamentally disequilibrating.

2.5 Conclusions

This chapter undertook the vital task of introducing the "high theory" of the DST and a selection of the *Laws of History* derived from it.

The framework was presented here for the very first time as an equation system. It was also extended by introducing a formal microeconomic underpinning for the DST in the form of the *Strategic Alternator*.

The following chapter builds on these theoretical footings by zooming in on the salient strategic parameters pertaining to the third GST, the Industrial. It forms a pragmatic bridge between the high theory of this chapter and the detailed empirical examinations of Japan and then China that are to follow.

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Chapter 3
Industrialisation Sub-strategies: Theory and Practice

3.1 Introduction

The objective of this chapter is to clearly outline the taxonomy of industrialisation sub-strategies that operate under the industrial GST and to introduce the *Strategy Grid*, on which much of the forthcoming analysis depends.

The framework will be initially put forward in the abstract. It will then be illustrated empirically, with reference to the experience of selected first- and second-generation industrialisers, viz. the UK, France, Germany, Russia, and the USA. These short case studies serve to both illustrate the utility of the framework and assist with the forthcoming discussion of industrialisation sub-strategies in the context of the Asian giants.

3.2 Strategies and Sub-strategies Under the Industrial Paradigm

By way of a reminder on terminology, in the DST, which encompasses the entirety of human history, "strategies" are high-level societal choices, Φ, made with respect to T, with technological change under the industrialisation banner the relevant primary option after the Industrial Revolution. "Sub-strategies" describe how societies approach Φ in a practical sense through time. In the present context, sub-strategies describe the manner in which societies industrialise and how they adapt their approach as comparative advantages develop and demand structures alter.

Sub-strategies adopted under the industrialisation umbrella are often characterised by the intensity of factor inputs required in each phase, with the conventional sequence being a staged tradition from labour-intensive to capital-intensive to knowledge-intensive activity. This basic process is mirrored on a

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broad sectoral basis by a move from a pre-industrial agricultural economy to one where secondary activity leads (accommodated by the internal migration of population from rural to urban areas), and finally to one where tertiary activity dominates (at which point the urbanisation rate peaks and sustains at a high level). Orthodox descriptions of this general process abound, with a chronological advance through the initial construction of long-run time series (Bairoch 1982; Clark 1938; Kuznets 1930; Maddison 2003; Mulhall 1892), attempts at systematic taxonomy and general theory building (Gerschenkron 1962; Rostow 1971, 1978), and the rise of growth accounting, the study of convergence, and economic growth's proximate drivers (Abramovitz 1986; Baumol 1986; Denison and Chung 1976; Dowrick and Nguyen 1989; Solow 1956). In the regional and country-specific East Asian context, each of these branches has its counterpart (see the range of references cited in the introduction).

Alongside the conventional framework, sub-strategies can be usefully categorised by their relationship to the external sector, which inter alia defines a society's desired level of international engagement. Sub-strategies that systematically eschew or minimise international engagement are not our theoretical concern here, whether they are genuine autarkies or merely protectionist import substitution regimes. As both Japan and China proactively embraced the external sector in their high growth eras, and as our principal interest is in projecting China's future place in the world system, the emphasis here must be on sub-strategies that endorse systematic international engagement. A discussion of China's anti-strategic pathway under Mao forms a large part of Chap. 6.

Industrialisation sub-strategies that incorporate proactive international engagement can take many forms (Amsden 2001; Chang 2002; Haggard 1996; Rodrik 2007). For the purposes of this study, which ultimately seeks to assess China's long-run pathway, which demands a judgement on how well it will navigate the middle-income phase of its development, it is vital to highlight both successes and failures in the historical record. The chapter following this one will outline Japan's record of remarkable success for more than a century after opening up in the middle part of the nineteenth century, as well as its eventual exhaustion from the early 1990s forward. Beforehand, a detailed but general discussion of outward-oriented sub-strategies under the industrial paradigm is required.

In the context of the GST embodied in the industrialisation meme, outward-oriented sub-strategies give priority to issues of international competitiveness. Competitiveness is recognised as vital to generate offshore sales, which earn the foreign exchange required to import the technology (and possibly also the natural resources, depending upon individual endowments) a latecomer society lacks. The absorption of this technology will eventually allow the newly minted industrial strategist to produce and export more sophisticated products and compete with, and displace, manufactured imports at home as the technological intensity of its industrial structure increases. Outward orientation entails exposure to market discipline in the search for international customers. Outward orientation demands an ability to move up the value chain as comparative advantages develop by continuously raising productivity levels, which ultimately drive increases in aggregate living standards. A

more technologically intensive fixed capital stock and improvements in human capital jointly raise the productivity of labour, which accommodates higher wages, which boosts domestic purchasing power, offering an expanded home market with a more sophisticated consumption basket.[1]

An outward-oriented economy industrialises as a means of raising living standards first and foremost—gains in export market share are a symptom of this goal and not an end in themselves. External demand is very important, and the growth pattern may superficially appear to be export-led in the sense put forward by Kaldor (1966) and Thirlwall (1983), but it is the manufacturing sector that defines industrialisation, and is thus "deified", not exports themselves. In the most conspicuously successful exponents of latecomer outward-oriented industrialisation, where very high GDP growth rates have been recorded, domestic demand consistently expanded at a considerably faster pace than global GDP, even when the nation's domestic growth was somewhat lower than the growth in its exports and its overall international trade. Successful outward orientation is reflected in a rising trade to GDP ratio, but the trade to GDP ratio itself need not be high in absolute terms or relative to peer economies at similar levels of income per head.

None of the above is meant to imply that an outward-oriented economy must be a determined free trader with an arms-length market-driven financial system—in the early and middle stages of industrialisation at least, rising industrial nations tend to be anything but *laissez faire* (Bairoch 1993; Chang 2002). Protectionism, particularly tariff barriers for "infant" industries (Bairoch 1993, Chapters 2 and 3, pp. 16–43), and direct subsidies abound amid an array of policies that benefit the industrialisation goal, both at and behind the border. Indeed, "getting the prices wrong", as per Alice Amsden's famous phrase (2001, p. 10), is a signalling mechanism available to a strategically minded state to ensure that aggregate resource allocation benefits the manufacturing sector while emphasising the appropriate leading industrial clusters as comparative advantages develop over the course of the industrialisation drive. Long-run success also encompasses the ability to de-emphasise former leading sectors/clusters once their international competitiveness wanes, which will be highlighted in the following chapter as a failing of Japan's strategic leadership that ultimately contributed to stagnation/exhaustion from the 1990s onwards. It will come up again in the Chinese context, most recently in what has become known as "supply side reform".

Successful outward-oriented industrialisation will result in a rising share of global exports and, after a point, "dynamic substitution" between domestic products and imports at home (McKay and Song 2010, pp. 10–11, Tables 2 and 3), reflective of increases in international competitiveness along the value chain. The term "dynamic substitution" is the author's own. It is chosen to distinguish a shift in import penetration driven by enhanced competitiveness in home industries from discredited strategies of activist import substitution (Lin 2008, 2012). The basic phenomenon

[1] For a discussion of the development process through the lens of consumer preferences, as it pertains to demand for various raw materials, see McKay et al. (2010) and Malenbaum (1973).

was first described in the Asian context by Akamatsu (1962), in his "wild geese flying pattern" model of Japanese economic development. The joint process of more effective competition at home and abroad is supportive of healthy external account repair, with some conspicuously successful latecomer economies from their respective generations—including the USA, Japan, South Korea, and China—being able to move from trade and current account deficit to surplus status on the back of these dynamics (McKay and Song 2010, p. 10). This observation tallies with the point that in economies operating outward-oriented sub-strategies, the aggregate savings-investment relationship is not pre-determined at any point in time.

3.3 A Formal Framework for Sub-strategic Diagnosis

A simple but effective way of tracking and categorising open industrialisation sub-strategies for economies operating well within the global frontier—i.e. still with material potential to catch up to the living standards of the societies comprising the strategic core of the world system—is to track national trends in global market shares of total output, industrial production, and, of course, exports and international trade overall while simultaneously monitoring the gap in living standards between the frontier and the nation in question.

The reason for the clear distinction between frontier and catch-up economies is that the dynamic of GST allows imitators (latecomers) the opportunity to grow more swiftly than the innovators (pioneers), with the latter necessarily ceding global share as their innovative technologies disseminate and global output accordingly moves closer to its potential level. Therefore, rushing to brand a frontier economy a failure simply because it grows more slowly than a latecomer, or even the global average, is not sound analysis. That is why the function that describes the fundamental drivers of strategic confidence (Eq. 2.6) is explicitly governed by both rates of change and levels of O, not just the former.

It is necessary to formally define the characteristics of a completely unbiased, or perfectly balanced, industrialisation sub-strategy to provide a baseline for the subsequent analysis. As the world economy is a closed system made up of national strategies of all stripes, it is reasonable to argue that the structure of aggregate global activity at any point in history will reflect a balanced strategy under the prevailing technological and institutional state. So, a nation that has an equivalent structure to that of the global economy can be seen to be operating a completely balanced strategy.

Developing the above point further, for an economy that starts from a position where its export, import (and by extension, total trade), and industrial output shares are equal to their global equivalents, to maintain that position through time, it must, by definition, expand its exports, imports, total trade, and industrial output at the same pace (quantum) that the respective world aggregates expand. Transitive logic extends those inferences to the export and import shares of industrial output. However, it is important to recognise that as natural resource endowments differ

considerably across countries going through the industrialisation process, raw material trade flows have the potential to obscure, rather than clarify, fundamental strategic inclinations. Export earnings will be inflated for those that have excess reserves of natural resources, and import bills will be inflated for those that do not.

Consider two economies with exactly equivalent manufacturing industrial structures utilising exactly equivalent technology in their equally sized anthropogenic capital stocks, with equivalently sized workforces with the same levels of education and tacit knowledge. They thus have the same manufacturing output potential and the same volume of raw material input requirements per unit of output. Where the economies differ is one is resource-rich and can fully meet these raw materials requirements from home reserves, while the other is resource-poor and is forced to import all of its raw material inputs. The first will have no import bill for raw materials, whereas the second's import bill will rise in lockstep with its manufacturing production. The two nations are fundamentally following a very similar industrialisation strategy, but the outcome on the import side is considerably different.

Such complications make cross-country comparisons utilising metrics based on imports, and by extension total trade, problematic as parameters for the study of open industrialisation sub-strategies. This study's approach is to acknowledge these limitations and accordingly focus on exports alone as the major signalling variable regarding the strategic inclinations of latecomer industrialisers. This position is justified partly by the resource curse literature (Auty 1993; Sachs and Warner 1995), which argues that the majority of nations with a rich resource endowment sufficient to provision a major export trade have experienced little success with industrialisation.[2] That implies that the distortion to import demand will be of less relevance to exports where successful long-run industrialisation is concerned. As a secondary point, a strong dependence on resource imports has characterised latecomer industrialisation across Asia (with the exception of the first two decades of China's international engagement from 1978, when it was largely self-sufficient in terms of raw materials), while manufactures are extremely dominant in the export basket.

Moving on to a formal statement of the balanced baseline, in the case of exports (X) and GDP (Y) for country i at time t in the global economy represented by subscript w, where bars "—" sitting above an expression indicate a fixed relation through time, a completely balanced strategy would look as below, following McKay and Song (2010):

[2] Research conducted during and in the wake of the commodity price super-cycle of the twenty-first century concluded that the evidence for a curse is more mixed than the more strident views expressed in the 1990s and before. One suspects that the results will vary in accordance with the sample period chosen, and how much "boom" and "bust" is captured in the modelling. See for instance Di John (2010).

$$\text{If} \quad \frac{\overline{X_i}}{Y_i} = \frac{\overline{X_w}}{Y_w} \tag{3.1}$$

$$\text{Then} \quad \Delta \frac{Y_{i,t}}{Y_{w,t}} = \Delta \frac{X_{i,t}}{X_{w,t}} \tag{3.2}$$

In the case of industrial output, or value-added (IVA),

$$\text{If} \quad \frac{\overline{\text{IVA}_i}}{Y_i} = \frac{\overline{\text{IVA}_w}}{Y_w} \tag{3.3}$$

$$\text{Then} \quad \Delta \frac{Y_{i,t}}{Y_{w,t}} = \Delta \frac{\text{IVA}_{i,t}}{\text{IVA}_{w,t}} \tag{3.4}$$

And for the export share of industrial output,

$$\text{If} \quad \frac{\overline{X}_i}{\text{IVA}_i} = \frac{\overline{X}_w}{\text{IVA}_w} \tag{3.5}$$

$$\text{Then} \quad \Delta \frac{\text{IVA}_{i,t}}{\text{IVA}_{w,t}} = \Delta \frac{X_{i,t}}{X_{w,t}} \tag{3.6}$$

An alternative way of expressing these relationships is in the linear sense, with the individual country as the dependent variable and the world economy as the independent variable. Under the conditions imposed above, the estimated regression coefficient (the beta) relating to the global variable would be unity.

A latecomer society successively pursuing an outward-oriented industrialisation sub-strategy will not merely maintain its relative position; it will grow its total output, its exports, and its industrial output faster than the rest of the world, increasing its global share of each arena. In other words, it will consistently achieve a beta greater than 1, with its distance from the living standards of the frontier assumed to be an important predictor of the size of the beta, consistent with the convergence hypothesis (Dowrick and Nguyen 1989). As the sub-strategy in question is focused on outward-oriented industrial activity, tradable segments of the economy will be growing faster than both their global equivalents and the non-tradable elements of demand in the society itself. Such conditions would turn Eqs. (3.1)–(3.6) into inequalities. That mechanical process is illustrated below, in a two-period framework.

Country i is now explicitly identified as a society successively pursuing an outward-oriented industrialisation strategy. A frontier economy (subscript *frontier*)

is also introduced as a barometer of relative living standards.[3] The frontier economy is mature and the latecomer is dynamic, and therefore the following relationship holds:

$$\frac{Y_{i,t}}{Y_{i,t-1}} > \frac{Y_{\text{frontier},t}}{Y_{\text{frontier},t-1}} \tag{3.7}$$

$$\text{While} \quad \frac{Y_i}{N_i} / \frac{Y_{\text{frontier}}}{N_{\text{frontier}}} < \Pi \tag{3.8}$$

Π is the threshold level of relative living standards required to achieve membership of the strategic core. Simply put, Eqs. (3.7) and (3.8) argue that successful latecomers will see their output grow more rapidly than frontier economies until they themselves become members of the frontier club.

What is the approximate value of this threshold, Π, in reality? Producing a rigorous independent empirical estimate of Π is beyond the scope of this study. The World Bank's definition of "high income" for taxonomic purposes is a gross national income (GNI) per capita of US $12,746 as of fiscal 2015, with the underlying home currency income converted to international dollars using its Atlas method (World Bank 2015a, b). That equated to just 23.8% of contemporaneous US GNI per capita. The mean (and median) GNI per capita of 14 major non-US Organisation for Economic Co-operation and Development (OECD) countries[4] since 1980 has been approximately 81% of the US level, with an average minimum of 63% (author's calculation using the IMF's October 2014 *World Economic Outlook* database). The World Bank definition—around one-quarter of the frontier—seems far too low to even serve as a realistic floor.[5] The observed mean level of GNI per capita relative to the USA—close to four-fifths—of an acknowledged group of high-income societies exhibiting mature growth rates seems like an

[3] The term "living standards" will be used to refer to the level of income or output per capita throughout the discussion. The author acknowledges the shortcomings of conventional national accounting aggregates as measures of "well-being", as argued by Snooks (1994), Stiglitz et al. (2009) and Piketty (2014). However, as a first approximation for the purposes of international comparisons, income or output per capita is an entirely reasonable measure, as the issues surrounding non-market labour (Snooks 1994) and the inequities in flows of income (Stiglitz et al. 2009; Piketty 2014) and stocks of wealth (Piketty 2014) are predominantly matters of internal imbalance, rather than cross-country phenomena, at least since the end of the colonial era (ibid).

[4] The countries in this calculation are Australia, Austria, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Spain, Sweden, Switzerland, and the UK. Note this is separate from the calculations used in the long-run pathways of Chap. 10, where the fringes of the OECD grouping are considered, and a lower value than three-quarters is derived as a target level of relative GDP per capita. The reasoning behind the alternative metric is explained in Chap. 10.

[5] It does, however, serve as a useful starting point for thinking about the end of the very high growth periods of successful latecomers, which has been observed to occur somewhere between US $10k and US $15k per capita in PPP terms (Garnaut et al. 2009; McKay 2008b, Figure 2; Perkins and Rawski 2007).

appropriate ceiling for Π. Taking the mean value then of the average and the minimum value in the 14-country OECD sample gives a rounded midpoint of

$$\Pi \cong \frac{3}{4} \tag{3.9}$$

The arithmetic is as follows: the midpoint of the rounded ceiling (4/5) and the rounded minimum (2/3) is

$$\left(\frac{4}{5}+\frac{2}{3}\right)\frac{1}{2}=\frac{22}{15}\times\frac{1}{2}=\frac{11}{15}=0.7333$$

which rounds to $^{3/4}$.

Moving forward, if at time t Eqs. (3.1), (3.3), and (3.5) hold (i.e. at time t the strategy is balanced as defined above) and in the ensuing period so too do Eqs. (3.10), (3.11), (3.12), and (3.13), then at the end of period $t + 1$, and assuming for simplicity fixed populations (N, Eq. 3.14), and that the frontier expands at the global average, country i will have improved its relative standing in the world economy; it will have increased its export share of total output relative to the world average; and it will have increased the IVA share of its total output relative to the world average; it will also have increased its export share of industrial output relative to the world average; and it will have raised living standards in absolute and relative terms, as it is outgrowing the frontier, which is itself expanding. To wit,

$$\text{Where} \quad \Delta X_{i,t+1} > \Delta X_{w,t+1} \tag{3.10}$$

$$\text{And} \quad \Delta \text{IVA}_{i,t+1} > \Delta \text{IVA}_{w,t+1} \tag{3.11}$$

$$\text{And} \quad \Delta Y_{i,t+1} > \Delta Y_{\text{frontier},t+1} \tag{3.12}$$

$$\text{And} \quad \Delta \frac{Y_{\text{frontier},t+1}}{N_{\text{frontier},t+1}} > 0 \tag{3.13}$$

Noting that by assumption (see text), for now

$$\Delta N_{i,t-t_n} = \Delta N_{w,t-t_n} = \Delta N_{\text{frontier},t-t_n} = 0 \tag{3.14}$$

$$\text{Then} \quad \frac{X_{i,t+1}}{Y_{i,t+1}} > \frac{X_{w,t+1}}{Y_{w,t+1}} \tag{3.15}$$

$$\text{And} \quad \frac{\text{IVA}_{i,t+1}}{Y_{i,t+1}} > \frac{\text{IVA}_{w,t+1}}{Y_{w,t+1}} \tag{3.16}$$

$$\text{And} \quad \frac{Y_{i,t+1}}{Y_{i,t+1}} > \frac{Y_{w,t+1}}{Y_{w,t+1}} \tag{3.17}$$

$$\text{And} \quad \frac{X_{i,t+1}}{\text{IVA}_{i,t+1}} > \frac{X_{w,t+1}}{\text{IVA}_{w,t+1}} \tag{3.18}$$

$$\text{And} \quad \frac{Y_{i,t+1}}{N_{i,t+1}} > \frac{Y_{i,t}}{N_{i}} \tag{3.19}$$

$$\text{And} \quad \frac{Y_{w,t+1}}{N_{w,t+1}} - \frac{Y_{i,t+1}}{N_{i,t+1}} < \frac{Y_{w,t+1}}{N_{w,t+1}} - \frac{Y_{i,t}}{N_{i,t}} \tag{3.20}$$

While noting that country i still remains short of the global frontier,

$$\frac{Y_{i,t+1}}{N_{i,t+1}} / \frac{Y_{\text{frontier},t+1}}{N_{\text{frontier},t+1}} < \Pi \tag{3.21}$$

Any industrialisation sub-strategy can be defined and analysed within these parameters. It is the extent of movement away from the path of the perfectly balanced and successful baseline economy that matters for strategic diagnoses, and the degree to which these deviations are ultimately remunerative in terms of durable increases in relative and absolute living standards.

This system can also be recast in terms of national economic scale, which is arguably a more relevant consideration for geopolitical strength (McKay 2012; Singer 1987; White 2012) than relative living standards.[6] To do so realistically would require a relaxation of Eq. (3.14), given the tendency for population growth to differ substantially across economies at different income levels, as the top-level strategy "population growth and dispersion" plays widely varying *subsidiary* roles at the different stages of industrialisation under the technological change paradigm (recalling the discussion in Chap. 2 on the high-level strategic mix). Furthermore, the arithmetic importance of demographic trajectories for the distribution of global activity over long-term horizons cannot be under-stated (McKay 2012). In the present context though, geopolitical considerations must be set aside, fascinating as they are, unless they are deemed to be material for the high-level strategic mix or

[6] A quantitative expression of this position is the National Capabilities sub-set of the Correlates of War database, which is completely scale oriented. See Singer (1987) and http://www.correlatesofwar.org/

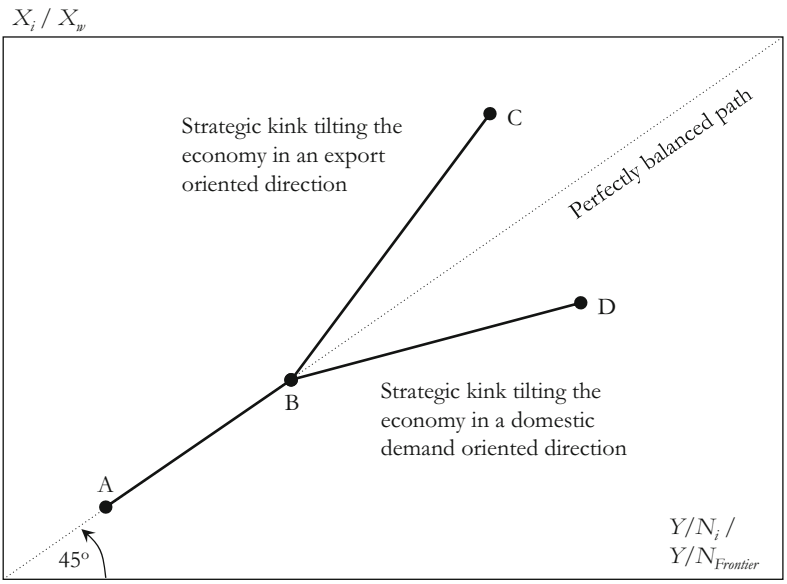

Fig. 3.1 Industrialisation sub-strategies: Successful kinks. Source: Author's own conception

the diagnosis of sub-strategic inclinations. This theme will be picked up again in later chapters.

3.4 A Diagrammatic Exposition: Introducing the *Strategy Grid*

The ideas expressed above can be usefully synthesised in schematic diagrams.[7] Consider Fig. 3.1, which is the simplest form of the *Strategy Grid*. The vertical axis represents world export share, which is a proxy for international competitiveness, and the horizontal axis represents relative living standards (income per capita in country *i* relative to the frontier), with activity occurring under the assumption set described above.

The completely balanced strategy is represented by the 45 degree line (on which lies the schedule A: B). While an individual economy is making positive progress on both axes, i.e. Eqs. (3.10)–(3.13) hold, as do their corollaries (Eqs. 3.15–3.20), the sub-strategy it is pursuing will be counted a success, and strategic confidence will build, generating the positive self-reinforcing dynamics encapsulated in the *Strategic*

[7] The author would like to thank seminar participants who offered many thoughtful comments on an early draft of this section of the research. The event was hosted by the Crawford School at the ANU on 16 November 2014.

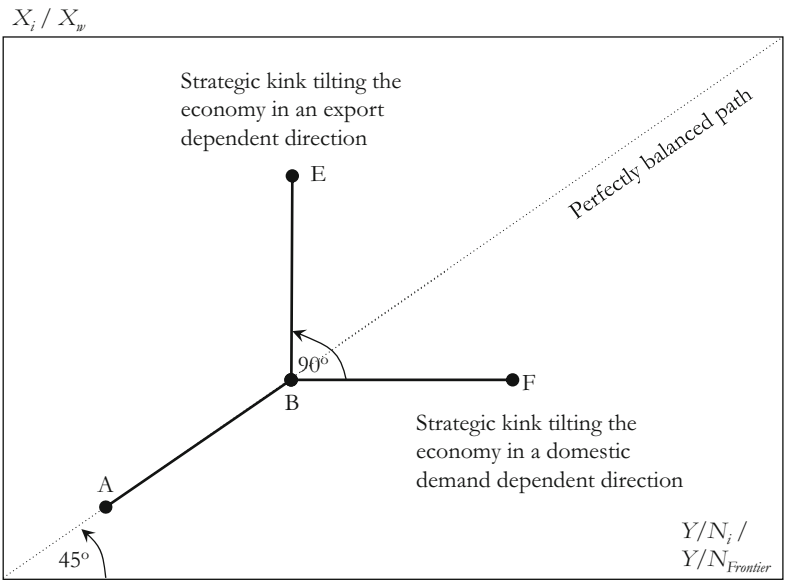

Fig. 3.2 Industrialisation sub-strategies: Dependent kinks. Source: Author's own conception

Alternator. Such an economy will raise living standards consistently and has the potential to eventually join the strategic core of technologically advanced industrial nations that strive to extend the global potential frontier. A move away from the 45 degree line will reveal that the sub-strategy has developed in either an export-oriented (the schedule B:C) or domestic demand-oriented direction (the schedule B: D). Points where the curve changes direction will be referred to as strategic "kinks".

Reversing the direction of the inequalities in Eqs. (3.10)–(3.13) would describe a nation that is falling behind in relative terms, which would spark widespread questioning of the validity of the sub-strategy being pursued, and an accordant loss of strategic confidence. Alternatively, inserting a "≤" or "≥" where there are presently ">" would encompass the circumstance where progress is halted on one axis, but not on the other.

This may be a signpost that the sub-strategy has developed a dangerous element of imbalance, which potentially makes a return to future progress on both axes questionable. Or, less ominously, it may signal that a historically successful sub-strategy is reaching maturity, and a transition towards an alternative that is consistent with the nation's evolving comparative advantages is either required or is underway.

If the scatter moves vertically, the sub-strategy is still delivering increases in export market share, but it has ceased to deliver increases in relative living standards, implying that the economy has become export-dependent (the schedule B: E, Fig. 3.2, with the kink being at B). In other words, to maintain its relative place in the world, the economy in question has had to procure larger and larger shares of foreign markets to offset a below-average domestic demand environment. If the

scatter moves horizontally to the right, the sub-strategy is still delivering rising relative living standards, but the method for achieving these gains has shifted in a domestic demand-dependent direction (the schedule B:F, Fig. 3.2, with the kink once again at B).

The horizontal kink may well be a desirable development in a large economy with a mass internal market. Alternatively, it could be a sign that the domestic economy is in danger of over-heating. The strategic leadership of an economy experiencing such a shift must diagnose which of these positions is closer to the underlying reality and aligns policy accordingly. If the shift is a benign one but it is interpreted as an emerging imbalance, then excessively restrictive policies will be instituted, needlessly damaging confidence and lowering living standards below their counterfactual level. If the shift is perceived to be benign, but in reality, the economy is overheating—i.e. confidence is out of line with fundamental conditions—then policy will be too accommodative, thus sponsoring a damaging over-extension of risky behaviour in the real economy and in finance, the combination of which will inevitably end badly (Kindleberger and Aliber 2005; Minsky 1984; Reinhart and Rogoff 2009). The Japanese example in the late 1980s and the USA during the majority of the George W. Bush presidency are two obvious historical illustrations of the latter point. The post-Civil War USA is a prime illustration of a benign strategic kink in the direction of domestic expansion that delivered durable increases in living standards for its citizens. The positive US example will be considered in greater detail below.

Both vertical and horizontal shifts raise the possibility of approaching exhaustion, but it is the vertical shift that represents the most immediate danger (unless it is a discretionary choice to repair a nation's international balance sheet after a period of crisis, such as the Nordic countries in the 1980s or South Korea after 1997/98). The confirmation of exhaustion is a moment of crisis. Strategic exhaustion—formally defined in Chap. 2 as a negative marginal return on a strategy with the point in time identified as a maximum—leads directly to the evaporation of strategic confidence, which unleashes the recursive negative forces embedded in the dynamics of the *Strategic Alternator*.

Consider Fig. 3.3, which replicates the schedule B: E from Fig. 3.2, and depicts the range of options available at the kink E, by overlaying a number plane with E as the origin. Each of the resulting quadrants of the *Strategy Grid* represents a different mode of strategic success or exhaustion. If the schedule moves into either the first or fourth quadrants, E would represent a strategic kink that takes the economy in a successful direction, while a move into the second or third quadrants would represent strategic kinks that take the economy in an unsuccessful direction, where exhaustion awaits. Any consistent movement back towards the origin (growth rates of exports falling below the global average and relative living standards declining, third quadrant) obviously raises the exhaustion alarm. Additionally, as it is progress on the horizontal axis by which strategic viability is ultimately measured, a kink that takes the economy into the second quadrant is also a retrograde one.

Regardless of the fact that export market share can mitigate the rate of relative decline being experienced, a sustained inability to make progress on the horizontal axis while living standards are well inside the frontier (i.e. Eq. 3.8 holds) is indicative

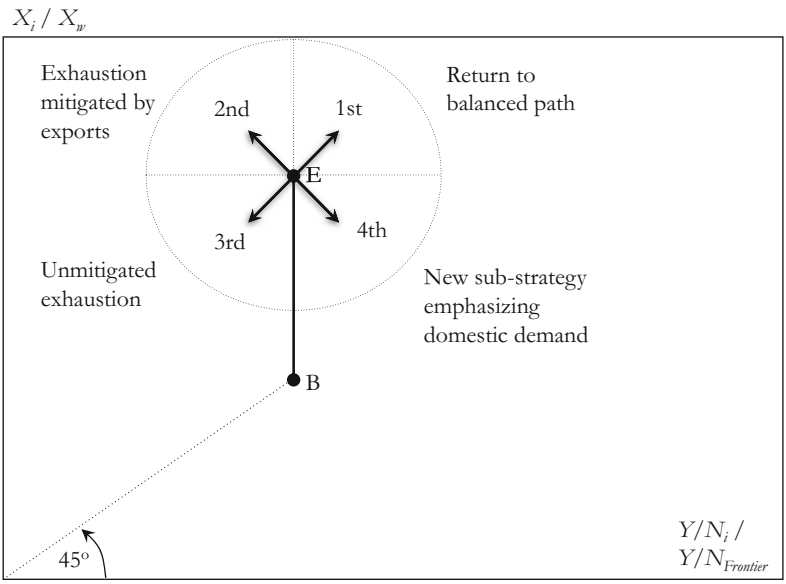

Fig. 3.3 Completing the Strategy Grid: adding the quadrants. Source: Author's own conception

of exhaustion. For instance, if an economy is suffering from a large, non-discretionary inventory build-up, it may be able to dump those goods on foreign markets below their cost of production. It will gain export share temporarily by doing so, but it will not be able to sustainably increase its living standards in that fashion. Further, the inventory build-up itself is likely to be a sign that its current offerings are no longer competitive, and the increase in market share, due to dumping, will swiftly unravel in future periods (even without incorporating the potential for retaliation by aggrieved trading partners), with a move into the third quadrant likely following its next kink. Therefore, confirmation that an export-dependent sub-strategy will exhaust imminently comes from any shift to the left within 180° (declining relative living standards, indifferent regarding export market share), following a vertical move away from balance.

There are a number of factors to consider with regard to the diagnosis of sub-strategic exhaustion under the industrial paradigm, which is an omnipresent threat, demanding as it does the continual maintenance of international competitiveness in a dynamic world driven by technological change, with the negative feedback loops embodied in the *Strategic Alternator* ever ready to be set in motion. Here we are particularly interested in the case where a sub-strategy diverges from a balanced position to an export-dependent one.

Export-dependent industrialisation is a finite sub-strategy that can exhaust itself—or be rendered obsolete—under a number of circumstances.[8] First of all, a producing country may expand its global market share to saturation point. Crudely, a strategic country can become a victim of its own success. The "saturation point" is the global market share threshold beyond which the producing country can no longer seriously expect to grow its sales at a pace materially different from the rate of expansion of the global market itself. This phenomenon is only likely to seriously constrain a "mega-state" (Murakami 1996; Snooks 1998, 1999) that is also operating at the frontier.

There is an additional special case of this broad mode of exhaustion. A country below the size of a mega-state may define the technological frontier in its areas of strongest competence and reach a dominant market share in these sectors. If these fields of endeavour represent a large element of the producing country's output, and if they slow down, overall growth will also decelerate and confidence in the sub-strategy will decline. A city-state pursuing an *entrepot* sub-strategy in tandem with niche manufacturing and high finance, such as Hong Kong or Singapore, is unlikely to ever reach global saturation point under the general definition. However, small open economies with a highly concentrated industrial structure or heavy dependence on a narrow pool of resources could potentially suffer under this special case. The demise of Nokia-Finland due to the rise of the smart mobile phone and the fact that other companies (Samsung, Apple) perceived and acted on this opportunity in a superior manner is one recent example.

Secondly, a country may lose the competitive advantages that enabled it to pursue a particular style of industrialisation in the first place. This may come about for a multitude of reasons. They include a relative decline in the strength of the society's "strategic vector", encompassing institutions, organisations, and leadership (see Eq. 2.5), which must work together synergistically to drive successful societal level outcomes, perhaps due to complacency dulling the pursuit of international competitiveness, sometimes referred to as "reform fatigue"; rising production costs at home, an inevitable concomitant of historical success, eventually outpace the country's ability to move up the value chain; a sustained adverse terms-of-trade shock occurs; technological innovation in competing locales shifts the boundaries in key sectors; the rise of a powerful rent-seeking elite, or broader interest groups, that divert resources away from surplus generating activities; and a range of potential policy errors.

There is an important special case of declining competitive advantage. A producing country may have achieved an unnaturally high global market share through a constellation of policies (such as tariffs, subsidies, tax exemptions, opaque quarantine, an undervalued real exchange rate, preferential access to finance, preferential procurements, weak internal competition policy, suppressed factor costs, unpunished generation of external diseconomies (e.g. environmental degradation),

[8] This section on sub-strategic exhaustion extends the arguments previously made by the author in McKay (2008a, b).

and other "behind the border" factors) that are no longer palatable at higher income levels, with the rise of politically engaged and well-educated mass working and middle classes. Or its trading partners find the measures increasingly repugnant and eventually offer retaliation. Or their design may be such that they are eventually able to be circumvented by external and internal agents, perhaps due to seemingly unrelated policy changes elsewhere that unpredictably weaken the mercantilist apparatus. Removing, by-passing, or altering the policy framework that supported the *ex ante* level of market share will see a reduction in market share *ex post*. The *ex ante* sub-strategy can still give way to an alternative that also targets gains in global market share under a more sustainable policy umbrella, but the *ex ante* sub-strategy is exhausted nonetheless. Discretionary reforms of this nature are often difficult to enact due to the contra-strategic incentives of embedded distributional interests (Olson 1982).

In Fig. 3.3, this special case would appear as a strategic kink from E taking the economy into the undesirable third quadrant, which in practical terms would result in a recession. After a period in which reform is conducted and international competitiveness is re-established under a new policy framework, the economy can return to balanced strategic success, with a kink in the strategic pathway taking it back towards, and ultimately beyond, E.

Thirdly, external events may render a sub-strategy obsolete. If the degree of global openness to trade collapsed for any reason, an export-dependent industrialisation sub-strategy would also collapse. An event that cuts off access to crucial technology or resources for a meaningful amount of time could also have this effect. Cyclical changes in demand do not necessarily undermine an export-dependent sub-strategy. A secular alteration in global demand structures, technological footings, or relative prices is another matter. Hypothetically, the introduction of a global carbon price aligned with the objectives of the Paris agreement would have immediate negative implications for an economy with a narrow industrial base concentrated on the export of fossil fuels. The same shock would seriously hinder a country with an energy generation infrastructure ill-equipped to move away from fossil fuels, which would generate a major loss of competitiveness for energy-intensive tradable output vis-à-vis the output of nations that have adapted earlier. A country reliant on the export of natural cork wine stoppages would find itself seriously challenged by the global dissemination of twist-top closures. A country reliant on the production of analogue technology would find itself seriously challenged by the advent of digital competitors. A plantation economy that lives by the proceeds of the export of a food product that is scientifically proven to be carcinogenic would enter recession overnight. If the export-dependent country is unable to adapt within a reasonable timeframe to challenges of this stripe, it would certainly experience sustained relative decline.

Consider Fig. 3.4. It replicates the horizontal shift in Fig. 3.2 (schedule B: F), which positions B as a domestic demand-dependent kink. In discussing Fig. 3.2, the conditions under which a horizontal move can be a desirable development were put forward. After all, the society in question is outgrowing the rest of the world, despite a stable export share. As discussed above, if the unit in question is a large nation with

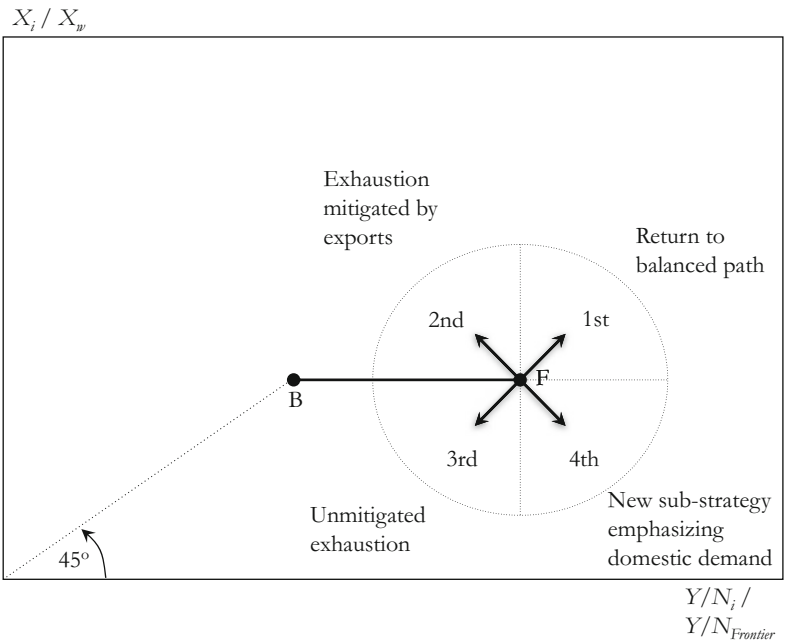

Fig. 3.4 Industrialisation sub-strategies: Exhaustion and viability following a domestic demand-dependent kink. Source: Author's own conception

a mass internal market (latent or operational), the horizontal shift could well be a sign that it is "making room for itself" in the world system in a positive sum fashion (McKay and Song 2010). Alternatively, it could be a sign that the domestic economy is in danger of over-heating.

Consistent with the discussion of Fig. 3.3, a number plane with origin F has been overlaid on Fig. 3.4. The strategic portents of the four quadrants are unchanged. Therefore, a movement from F into the second and third quadrants represents retrograde steps that point to exhaustion, whereas movement into the first and fourth quadrants represents remunerative kinks.

The only caveat required here is that the fourth quadrant represents an even greater dependence on domestic demand (relative living standards rising but export share declining) than that indicated by the move from B to F (relative living standards rising but export share stable). A move into the fourth quadrant that comes after a period such as that described by B: F should therefore be viewed with some suspicion by policymakers, who would do well to be doubly sure that it is not their own policy settings that are generating over-confidence in a domestic-led strategy. At the very least, the acceleration in domestic demand that is occurring alongside the loss of global export share would be associated with a sharp deterioration in the current account position of the economy in question, which would create fundamental vulnerability to any future difficulty in raising external finance

where the country in question does not have the privilege of issuing a reserve or (even better) vehicle currency.

3.5 The *Strategy Grids* of First- and Second-Generation Industrialisers

Keeping these theoretical relationships in mind, it is time to move forward to real-world data to assess national strategic inclinations and success in specific epochs. Consider Figs. 3.5 and 3.6. The four panels in Fig. 3.5 represent the *Strategy Grids* of four major economies representative of the first and second generations of industrialisation, viz. the UK (or "Britain"), France, Germany, and the USA. Figure 3.6 depicts the same four economies, but this time the vertical axis depicts the individual country's share of total world IVA.

Note that the vertical axis in Fig. 3.5 measures the share of each economy in total world trade (exports plus imports), rather than exports alone. It was argued above that exports alone were the best measure of international competitiveness, given that differential resource endowments may distort import shares and thus total trade. Data

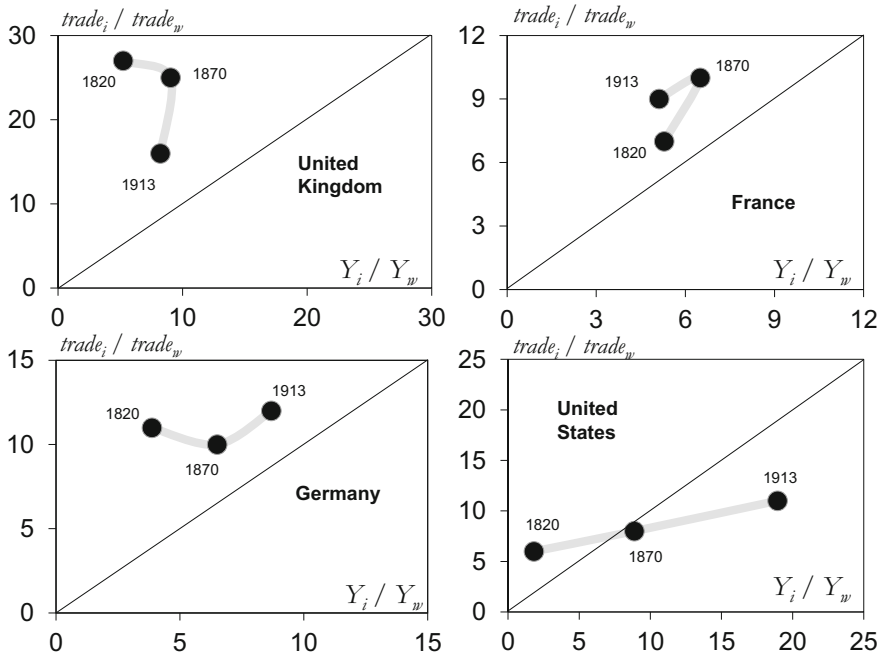

Fig. 3.5 Strategy grids for major industrial economies: trade lens. Source: Trade and IVA data from Rostow (1978, Table II-8, pp. 70–73; Table II-2, pp. 52–53). GDP per capita comes from Maddison (2009)

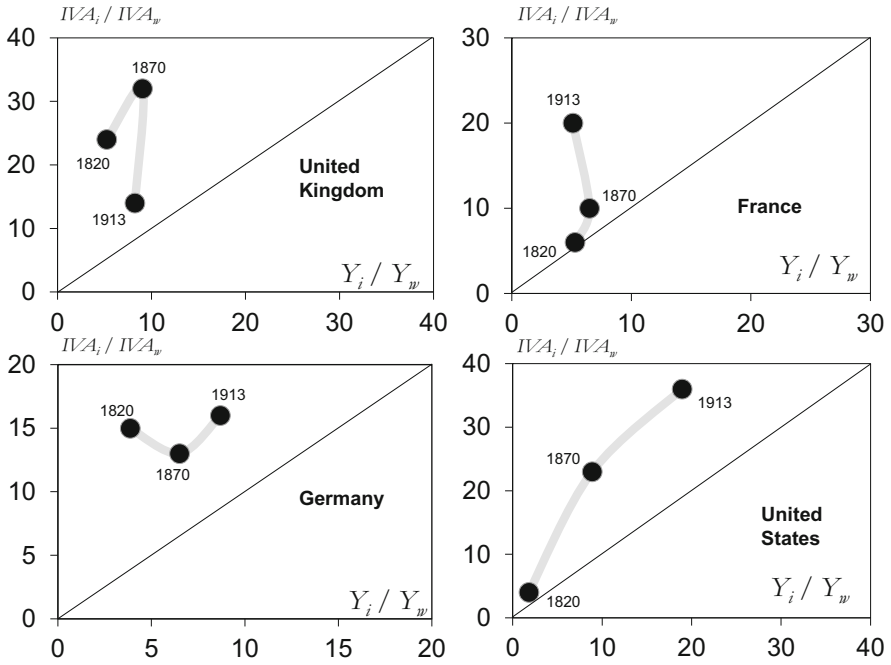

Fig. 3.6 Strategy grids for major economies: industrial output lens. Source: Trade and IVA data from Rostow (1978, Table II-8, pp. 70–73; Table II-2, pp. 52–53). GDP per capita comes from Maddison (2009)

constraints do not allow for world export shares to be presented for every economy, which would be the ideal circumstance. The share of total trade, which is available on a consistent basis back to 1820 for the economies in question, is a reasonable proxy in this instance. This position is defensible as none of the economies in question could be said to have suffered from the resource curse, and all had reasonable energy reserves available to power at least the first few generations of home industrialisation. Therefore, it is unlikely that trade to GDP ratios in these examples are unduly biased, from the perspective of strategic diagnosis, by non-manufacturing influences. While the USA was certainly a major exporter of raw materials for much of the nineteenth century, its trade to GDP share at the outset of the period under consideration (1820) was the lowest of the four, which argues against the possibility of a rich resource endowment being a major upward bias to the trade share coming through the export side.

Russia will be considered separately below, both due to data constraints prior to 1860 and its large reliance on the exports of natural resources.

There are three paired moment-in-time observations in each panel of Figs. 3.5 and 3.6: 1820, 1870, and 1913. Recall that a perfectly balanced economy replicating the global average structure will have a scatter that describes a 45 degree line. Note also that the scale of the axes of each *Strategy Grid* has been adjusted for the economy in

question so that strategic inclinations are readily visible and not obscured by a common scale tailored to the largest economy in the sample. The scale of the axes for the individual countries is not constant across the two figures, so the reader should be aware of this when attempting visual comparisons.

The individual country paths in Fig. 3.5 are highly instructive. Each point in time, and the point-to-point movements, can be analysed in the same fashion as the strategic kinks in the schematic versions of the *Strategy Grid* above, by mentally overlaying a number plane with the observation in question at the origin. The directional movement in the curve between two sequential time stamps indicates which strategic quadrant was passed through. Conducting that mental exercise with regard to France (the top right-hand panel) which was, "[A]fter Britain, the first major nation to seek initiation into the industrial mysteries" (Trebilcock 1986, p. 112), we can describe its strategy between 1820 and 1870 as an unsuccessful external demand-dependent one, as it moves decisively into the undesirable third quadrant following the 1820 kink, whereas the period between 1870 and 1913 was a period of domestic demand-dependent relative success, as the new kink pushed it into the fourth quadrant.

The prima facie evidence thus suggests that France's strategy changed considerably from the post-Napoleonic era through to the end of the Belle Époque. The major kink came hard on the heels of the loss of the Franco-Prussian War of 1870–1871 (including the payment of an indemnity of 5 billion francs and the loss of Alsace-Lorraine[9]) and coincided with the onset of the Third Republic. The French economy was forced to remake itself after the political and social instability of the first half of the nineteenth century, with the fall of the Second Empire culminating in a period of relative decline in living standards across the half century from 1820.[10]

Trebilcock (1986) synthesised the prevailing consensus among economic historians in the Anglosphere that "Gallic temperaments appear to have proved ill-suited to the experience" of industrialisation, while (1996, p. 114) noted a lack of practicality in the education system, which chose to focus more on basic than applied science, the latter, of course, being the more pragmatic approach for a latecomer.

Figure 3.6 indicates that the decline in relative living standards was accompanied by a material reduction in France's world IVA share in the 1820–1870 period. Indeed, France's share of world IVA more than halved over this time period. As

[9]The transfer of territory between France and Prussia/Germany is accounted for in the Maddison (2003, p. 27) estimates as a 4% uplift in the level of German output and population in 1872. Curiously though, the territorial loss is difficult to discern in the raw French estimates, with a boost in civilian activity after the armistice showing a 9.3% uplift in French GDP in that year, greater than the German growth of 7.3%. Given that France was the physical theatre of the war, that seems sensible to a degree, but given the large loss of raw materials, population, and productive capital stock entailed, a more discernible "dent" in French activity growth in 1872 seems a reasonable prior.

[10]Roehl (1976) caused a controversy by challenging the "retardation" thesis of French industrial development (see for instance Landes 2003), while Crafts (1984) took up a position between the retardation and revisionist schools.

the spread of industrialisation from the UK and the Low Countries to the major continental powers was the major force in the world economy during this epoch, this loss of market share in IVA is a telling sign of strategic difficulty. Trebilcock (1986, p. 132) argued that the process of technology transfer from Britain was severely constrained by the Napoleonic Wars, which left France two decades behind the technological leader at the opening of the period under discussion. Recurrent political and economic crises (1827, 1831, 1837, 1846–1848) hindered entrepreneurial confidence. Furthermore, French population growth was relatively low from 1820 to 1870, with its compound annual growth rate of 0.42% being well below the German (0.91%) and British (0.79%) rates for the period.[11] France maintained a lower crude birth rate than the European average throughout the 1830–1910 period (Crafts 1984, Table 3, p. 54). This held back the growth in the scale of France's domestic market for manufactures, although it also provided a relatively favourable trend in the denominator of the living standards proxy used in this study. The apparent export-dependent nature of French strategy up to 1870 is reflected in the observation that exports trebled over the course of the Second Empire (Crafts 1984, p. 162).

France's return to a successful strategy that was remunerative in terms of relative living standards between 1870 and 1913 was, as indicated above, dependent on domestic demand: a fourth-quadrant strategy. So, strategically speaking, France moved from the undesirable second quadrant to the fourth quadrant, which may or may not be desirable, depending upon the fundamental characteristics of the domestic demand growth that comes with it. The author's assessment is that this move was benign, as the nature of the economy at the time of the 1870 kink implied an imbalance in terms of external demand, and thus a corrective period of fourth-quadrant style growth was an entirely reasonable response.

Surveying French economic development from 1750 to 1900, Trebilcock (1986, p. 112) concluded that: "Indeed, it is arguable that from 1750 France was faced with retreating economic prospects and an economic stature which diminished progressively as first Britain and then Germany passed her by. By 1900 France was clearly the laggard among the powers and not even the unusually energetic progress of the Belle Époque could erase the languid and spasmodic growth pattern of the preceding century and a half" (1986, p. 112). There is certainly some truth in those sentiments regarding the period up to 1870, especially so for the first half of the nineteenth century. Furthermore, the assertion that France was a laggard as of 1900 is supported by the data, if relative output per head is the measure used (the horizontal axes in Figs. 3.5 and 3.6). Even so, the blanket judgements embodied in the competing "retardation" (Landes 2003) and "revisionist" theses (Roehl 1976) ignore the very

[11] These rates were calculated by the author using the population estimates in the Maddison (2009) database. Low French population growth rates in the 1800s have been argued to be a response to the rural poverty of the 1700s (Piketty 2014, pp. 3–4). A vivid description of the low living standards pervading in the French countryside, published in 1792 by the agronomist Arthur Young, apparently greatly influenced Malthus' seminal *Essay on Population*, published in 1798. See the discussion in this reference.

different strategic inclinations of the French economy before and after the kink of 1870. One school emphasises the poor performance of the earlier phase, while the other emphasises the positive momentum achieved under the Third Republic. The framework presented here allows for a robust separation of the two phases within a common theoretical context.

Repeating this exercise with respect to Germany (the lower left-hand panel of Figs. 3.5 and 3.6) reveals an unremunerative strategy from 1820 to 1870, with a decline in its trade and IVA shares and a small adverse move in relative output per head. This is, of course, a third-quadrant outcome. Recalling the dominant themes of German nineteenth-century history, this is not an intuitive result. These themes were: a formidable catch-up industrialisation process (Kindleberger 1996, pp. 152–161) assisted by the development of a mass internal market (Florian 2013); an able industrial policy aided by bureaucratic competence; and the development of long-term financing for capital-intensive sectors (Tilly 1966), which operated parallel to Prussia's blood and iron unification of the divided kingdoms that existed at the time of the Vienna Congress of 1815. In addition, we have Trebilcock's assessment that Germany passed France over the course of the nineteenth century, and Kindelberger's (1996, p. 149) that it surpassed Britain ahead of World War I. While Germany was acknowledged to be an "industrial backwater" (Tilly 1966, p. 484) at the close of the Napoleonic Wars, with "a lag of at least half a century on the way to machinism" (Kindleberger 1996, p. 159) as of 1820, such was its industrial progress that rivalry with Britain, the acknowledged leader, was being openly discussed just two generations later (Kindleberger 1996).

How then can this third-quadrant outcome for Germany in the period 1820–1870 be reconciled with the historical narrative? Here a reference to the fundamentals of the DST is in order. That requires a reconsideration of the prima facie sub-strategies through the broader prism of Φ (Eq. 2.4). Germany's nineteenth-century development up to the moment of unification (represented approximately by 1820–1870 in the scatter) was characterised by a strategic mix that featured the primary aggregate strategy of technological change (industrialisation), with subsidiary strategies of commerce (customs union within, protectionism with respect to inward international trade), conquest (the south by south-west progress of the Prussian army enlarged the resources at the society's command), and population growth (enlarging the borders of "Germany" came with stepwise increases in population, alongside a higher rate of natural increase than in the more mature France). Given the nature of Φ in nineteenth-century Germany then, a case can be made that the most appropriate measure to assess the success of German strategy from the Congress of Vienna (1815) through the institution of the Zollverein (1834), and the Schleswig-Holstein (1864), Austro-Prussian (1866), and Franco-Prussian (1870–1871) wars, is one of scale.

If relative scale is a more appropriate gauge of German strategy in the first 50 years of the sample period, then, how does that alter the assessment? In that regard consider Fig. 3.7. The horizontal axis now depicts Germany's share of world output to capture relative size, while the vertical axis measures shares of both IVA and trade. The impact of the many changes in German land area and population on GDP estimates is detailed in Maddison (2003, pp. 27–28). Here, rather than the

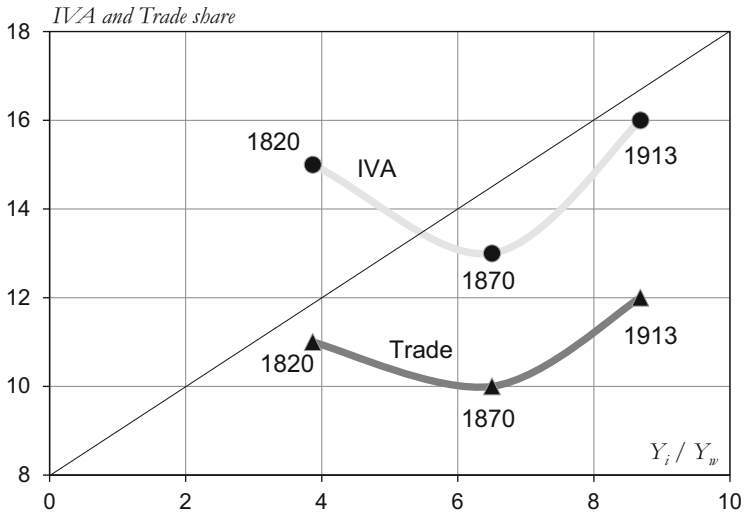

Fig. 3.7 A closer inspection of Germany's strategy in scale terms. Source: Underlying data as for Fig. 3.6. The horizontal axis now depicts Germany's share of world output, not its output per capita as a proportion of the frontier, as in Fig. 3.6

undesirable third-quadrant outcome for 1820–1870 described in relative GDP per capita terms in Figs. 3.5 and 3.6, Fig. 3.7 shows considerable progress on the horizontal axis, with a domestically oriented, fourth-quadrant outcome now observed.

This framework appears to produce a more intuitive result, as it depicts an excellent example of a large nation making room for itself through domestic demand optimisation, indicating yet again that the fourth quadrant is by no means a terrible place to be strategically if the ability to grow internally is genuine. Continued success from 1870 to 1913, but this time in a more balanced fashion (rising shares of trade, IVA, and GDP, i.e. a shift into the highly desirable first quadrant), indicates that Germany was able to adapt its historically successful sub-strategy of internally led industrialisation and market expansion and integration to one where external demand played a stronger complementary part. Returning to Figs. 3.5 and 3.6, in the post-unification period Germany's relative living standards also increased impressively, with both the trade and IVA plots signalling a balanced, highly desirable first-quadrant strategy in the four decades or so leading to World War I. A flexible application of the strategic framework therefore indicates that the German people (s) enjoyed a successful nineteenth century.

What of Russia, that formidable potential force that so perturbed Britain with its nineteenth-century expansion into central Asia that some scholars have argued (Frankopan 2015: chapter 16) that it indirectly led to the stark deterioration in Anglo-German relations that ended so miserably?

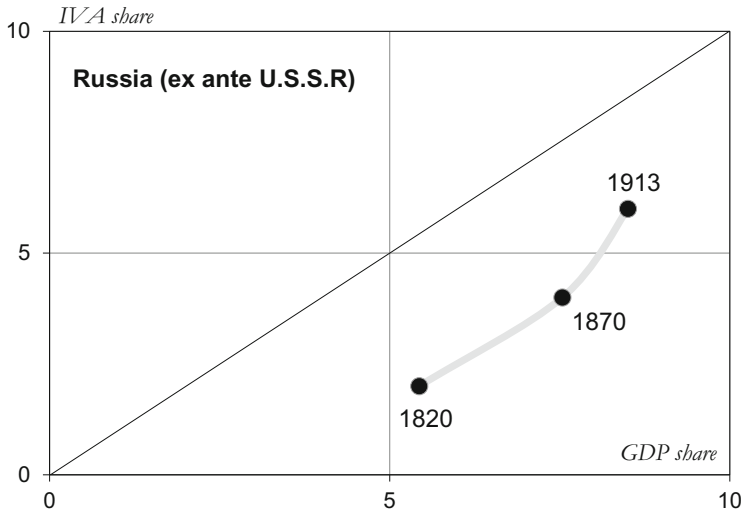

Fig. 3.8 Russia's strategy grid in the long nineteenth century. Source: Underlying IVA and GDP data as for Fig. 3.6

Firstly, the data and the narrative economic history points to Russia being the last major European power to industrialise. Secondly, the dominant role of primary industries in its international trade may make the data that is available more difficult to interpret. The combined force of these two points infers that there is arguably less to glean from the Russian industrialisation experience than the other four countries in the sample: certainly in the 1820–1870 segment of the *Strategy Grid*.

Industrial production data prior to 1860 is not readily available (Bénétrix et al. 2012; Suhara 2017; Rostow 1978). Alexander Gerschenkron, the doyen of Russian economic historians, and the progenitor of the concept of "economic backwardness" (Gerschenkron 1962), compared the Germany of the 1850s with the Russia of the 1890s (ibid: 19) and focused his empirical studies of Russian industrialisation from the period beginning in 1885. Buttressing its latecomer status from the nineteenth-century point of view, Trebilcock (1986: 205), citing R.W. Goldsmith (1961), described Russia as predominantly agrarian as of 1861 and still "underdeveloped" at the time of the Revolution of 1917. Nutter et al. (1962) argued that no decisive attempt to break out of a "backward" condition was made prior to the inauguration of the 5YP in 1928. Empirically, Bénétrix et al. (2012) nominate 1880 as the year of Russia's entry into the "modern growth club". Trebilcock (1986: 205–209) highlights the economic inheritance of "chronic backwardness" that constrained growth "until as late as 1890" while noting that some improvements were evident from the 1870s. These were mainly ascribed to the construction of a railway network that began to subdue some of the tyranny of distance that afflicted the economy versus its competitors to the west.

The interpretation of the above in terms of Russia's *Strategy Grid* (Fig. 3.8) is that there is no sufficient evidence to take the 1820–1870 schedule as reflective of a

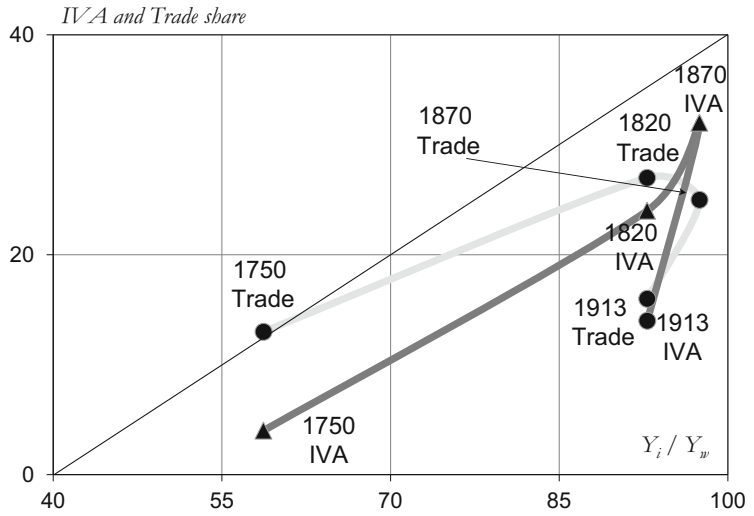

Fig. 3.9 A closer inspection of Britain's strategy from 1750. Source: Underlying data as for Figs. 3.5 and 3.6. Note that the GDP observation paired with the 1750 observations for trade and IVA is actually from 1700, due to data availability (the Maddison database has point estimates for 1700 and 1820, but nothing in between)

national economic strategy centred on the industrial paradigm. There is sufficient evidence to take the opposite perspective for the period 1870–1913. What do we learn from that? Firstly, the schedule sits firmly on the right-hand side of the 45 degree line, implying an economic structure that did not accentuate industrial activity. Second, the gradient of the curve is steepening towards the 45 degree line, implying that while in aggregate industry was not yet a dominant pursuit, it was growing more rapidly than other sectors. Third, the 1870–1913 era can be seen as a successful one for the Russian people, as the schedule is clearly passing through the desirable first quadrant. So, while Russia was not yet accounting for a dominant share of the global economy in 1913, given the immense potential of its natural endowments, one can begin to empathise with the anxieties of Britain's strategic leadership.

Moving on from the strategic inclinations of France, Germany, and Russia, we proceed to the UK and the USA. The UK, as the pioneer of industrialisation, and the USA, as its most precociously successful follower, deserve close inspection. To accommodate this, their respective panels in Figs. 3.5 and 3.6 have been merged into single, independent figures (Figs. 3.9 and 3.10), and the UK has been granted an extra, earlier observation, to take account of its unique position as the progenitor of the Industrial Revolution, which initiated the third GST. In these merged figures, the vertical axis measures world shares of both IVA and trade, while the horizontal axis is unchanged.

It is immediately evident that extending the scatter plot backwards to incorporate 1750 materially adds to our knowledge of the UK's industrialisation strategy. Once

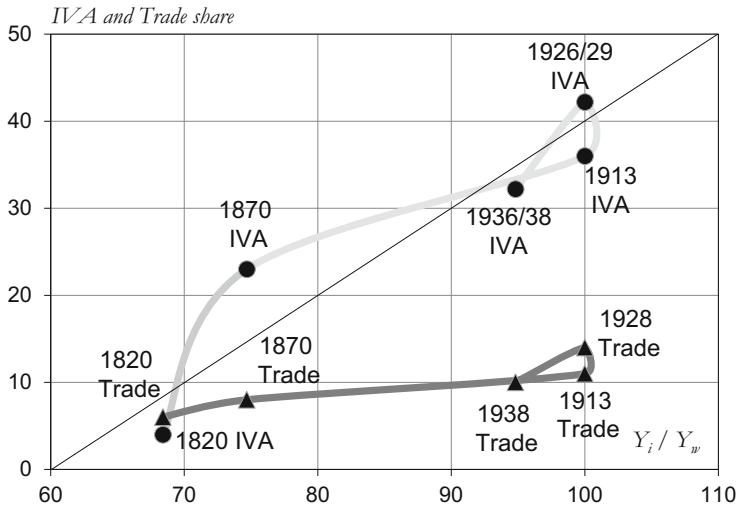

Fig. 3.10 A closer inspection of the USA's strategy from 1820. Source: Underlying data as for Figs. 3.5 and 3.6

again, envisaging number planes with the two 1750 observations forming the origin, a strikingly successful first-quadrant strategy emerges between 1750, ahead of the Industrial Revolution, and 1820, when Britain emerged from the Napoleonic Wars as the undisputed leading economy in Europe and a genuine manufacturing powerhouse.

A domestic demand-dependent kink is evident in the 1820–1870 period, while a near vertical downward shift is observed from 1870 to 1913. The UK's internal market became a major source of demand in this period, and with the international competitiveness of its manufacturers intact, it was able to both grow its GDP faster than the world average while maintaining a very high share of total world trade.

The description "near vertical" seems most appropriate regarding the post-1870 curve, rather than categorising it as a third-quadrant observation. Here we note both the very approximate nature of the underlying data and the UK's clear status as a large, frontier economy that was bound to eventually cede some of its relative position if the GST proceeded smoothly. Furthermore, the UK was already well on the way to becoming a services-driven economy at this point. Arguably the UK was already edging in a post-industrial direction in the period 1870–1890, which explains the steep fall in its global IVA share. Notably, that decline is not mirrored in a significant loss in terms of relative living standards, indicating that the UK was transitioning quite successfully towards a replacement sub-strategy when World War I broke out.

A major element of this replacement sub-strategy was the vast deployment of private savings in both direct and portfolio foreign investment (Davis and Huttenback 1986; Magee and Thompson 2010), even as the European balance of power struggle spilled into colonial competition (Snooks 1997, pp. 294–295). Net

foreign assets quadrupled in current pounds sterling between 1875 and 1910 (Piketty and Zucman 2014, Appendix Table UK.6f), which equates to an increase from 1.17% of national income in 1875 to 176% of national income in 1913 (Piketty and Zucman 2014).

Stone's data (1999), presented in Magee and Thompson (2010, Table 5.1, p. 173), show that some 39.6% of British capital exports over the entire period from 1865 to 1914 went to the Empire. So, the "lion's share" (pardon the pun) was invested outside the physical borders of the Empire, with the USA by far the largest destination (of which more below). London's status as the pre-eminent or "undisputed" (Magee and Thompson 2010, p. 171) international financial centre[12] was firmly established in this period. The rise of private finance as an industry of macroeconomic significance was no doubt endogenous to the rise of the service economy.

For the case of the USA (Fig. 3.10), the data argue that its rise to global pre-eminence over the "long" nineteenth century was associated with a balanced first-quadrant strategy that was domestic demand led, but did not ignore the external sector. In 1820, the USA was clearly backward in terms of both its industrial attainment and the degree of its international economic engagement. However, it experienced a spectacular growth phase over the following half century, sharply increasing its share of world GDP and IVA, while steadily increasing its footprint in international trade, and moving decisively towards the living standards frontier. That strategic path is consistent with our knowledge of the dramatic extension of the western frontier, first of all driven by the rapid increase in population led by high rates of household formation and then by net migration inflows (Snooks 1997, p. 369), and the major investments in domestic market integration that occurred, notably in transport infrastructure (Fishlow 2000), all of which contributed to the development of an industrial economy operating on a truly continental scale: the world's first Industrial mega-state (Snooks 1997, Chapter 11).

Between 1870 and 1913 the data argue that, strategically speaking, it was more of the same in terms of IVA and trade shares, just from a higher starting point. The schedule depicting trade shares for 1820, 1870, and 1913 essentially describes a straight line with a modest upward slope. However, the outcome vis-à-vis the USA's relative living standard was spectacular. Despite achieving a relative standard of living equal to the theoretical threshold (Π) for strategic core membership in 1870 (74.7% of the frontier), the USA's compound per capita growth rate in the period from 1870 to 1913 (0.65% per annum) was more than double what it had been in the period from 1820 to 1850 (0.30% per annum), and was considerably higher than the global average (0.47% per annum) in this relatively high growth phase for the world

[12] As noted in McKay (2014a, b, note 3, p. 4) recent evidence shows that Paris was an impressive international financial centre that was not as far behind London as one might have supposed during the Belle Époque (Flandreau and Gallice 2005). However, the description of London as pre-eminent has not been seriously challenged and is taken as given in most instances.

economy as a whole.[13] Coupled with the fact that the US economy was now very large by any standard (Maddison estimates that it surpassed the UK in size in 1872, while it joined the UK, India, and China in the $100 billion annual GDP club in 1871), those relatively rapid growth rates represent a most remarkable performance.

The diffusion of the victorious North's domestically led industrialisation strategy across the continent in the post bellum era can be easily read in Fig. 3.9. The data describe a further deepening of industrialisation over the final third of the nineteenth century and the decade preceding World War I. The US's share of global IVA approached 40% in 1913, which represents a near tenfold increase between 1820 and 1913.

The primarily domestic outlet for the rapid expansion of industrial activity is evident from the increasing vertical distance that opened up between the two schedules from a similar starting point in 1820. The fact that the pursuit of international competitiveness was not abandoned during this period, despite high levels of tariff protection for local manufacturers (Bairoch 1993, pp. 32–38), is illustrated by the steadily rising share of international trade that accompanied the industrialisation drive. The immense scale of operation afforded to manufacturers servicing this true mega-market in the post bellum era was a major source of international competitiveness. It was only the ravages of the Great Depression, and the economic nationalism to which it gave birth in the 1930s, that saw the US's shares of world trade and IVA fall back, and while its status as *the* wealthiest economy was also lost in this period (another settler economy, New Zealand, enriched by technological developments in shipping and cold storage, alongside rising consumer demands from the European middle class that complemented its agribusiness competencies, had attained the mantle), it remained unquestionably a frontier economy and it continued to enjoy a higher level of income per capita than the first- and second-generation European industrialisers considered above.

The situation in the USA is a prime example of a large nation making room for its own industrial rise through the integration and then exploitation of internal markets (McKay and Song 2010), which is a positive sum action from the global point of view. This statement is not intended to diminish the central role played by foreign, principally European, capital in the industrialisation drive. The USA was a net importer of capital for most of the time between 1820 and 1900 (Davis and Cull 2000; Lipsey 2000), with foreign investment playing a major role in the capital formation booms of the 1830s and the decade after the Civil War. Prior to the Civil War, the majority of this capital was directed towards strategic financial and transport infrastructure, with borrowing by state governments, banks, and railway companies (Davis and Cull 2000, Tables 16.3 and 16.4, pp. 741–742).

After the Civil War, the federal government became a major borrower in international capital markets, while railway issues continued on a large scale alongside a moderate diversification towards land, agricultural, mining, and industrial concerns (Davis and Cull 2000). While the majority of this investment came from Britain in

[13] These figures are author's own calculations from estimates in Maddison (2009).

Table 3.1 Dynamic substitution in the USA, 1820–1913

	Raw materials		Semi-manufactures		Manufactures	
Share of . . .	Exports	Imports	Exports	Imports	Exports	Imports
1820	59.6	5.5	9.6	7.3	5.8	56.4
1830	62.7	7.9	6.8	7.9	8.5	57.1
1840	67.9	12.2	4.5	11.2	9.8	44.9
1850	62.2	7.5	4.4	14.9	12.6	54.6
1850–1858	60.3	8.7	4.1	13.2	12.6	52.5
1859–1868	41.3	13	5.3	13.1	15.7	42.3
1869–1878	44.1	15.7	4.7	12.8	15.9	34.6
1879–1888	34.2	20.6	4.8	14.5	15.1	30.9
1889–1898	32.9	24.7	7	13.9	17.1	26.7
1899–1908	29.2	33	11.9	16.6	24.6	25
1904–1913	32.3	34.6	14.8	17.7	28.3	24.1

Source: Lipsey (2000, Table 15.10, p. 702)

the first half of the nineteenth century, with 90% of funds coming from that source as of 1861, the proportion had declined to 59% by 1913 (Davis and Cull 2000, Table 16.6, p. 747). The second largest investor at the outbreak of World War I was Germany, followed by the Netherlands and France (Davis and Cull 2000, Table 16.8, p. 749).

The ability of the USA to consistently externally finance a proportion of the capital formation that was so central to its industrialisation drive indicates that its predecessors on this path, principally the British, were extremely confident that their own strategy could be replicated elsewhere by follower societies. Indeed, one might reasonably claim that British investors, buoyed by their own remarkable pioneering successes, were extremely confident in the veracity of the GST that they had set in motion. Even the substantial state government defaults of the 1840s, and the bankruptcy of the Confederacy, did not stem the tide of net foreign capital inflows to the USA for long.

The USA would go on to take advantage of the domestic mega-market that was created by these substantial investments, developing mass production and distribution techniques in private firms and enjoying the associated economies of scale and scope. The successful application of this strategy eventually led to its domination of global consumer durables industries until well into the second half of the twentieth century (Snooks 1997, pp. 384–390). The nation became a net exporter of capital by the beginning of the twentieth century (Davis and Cull 2000, Table 16.2, p. 737), while its share of world trade rose higher in the period from 1913 to 1928, as the many demands of war-time Europe were added to the needs of the home market, allowing for a further expansion of productive scale.

The growing competitiveness of US industry manifested itself in a rising share of manufactures in exports and a falling share of manufactures in imports (Table 3.1). The failures of Latin America import substitution policies, which went against comparative advantage (Lin 2008, 2012), have led economists to be suspicious of

declining import shares in industrial economies. However, a declining import share in manufactures is absolutely consistent with outward orientation if global export shares are also rising in the same areas. As competitiveness is absolute vis-à-vis local and foreign markets, there is no reason to differentiate between displacing imports and making inroads internationally. Both are positive functions of development.

This observation holds even when the USA's higher relative tariff rates are accounted for, as the share of manufactures in its imports fell along with the tariff over the course of the nineteenth century. The ratio of duty collected and total imports fell from 50.8% in 1829–1831, or 54.4% if only dutiable imports are used, to 14.9% in 1914, or 37.6% if only dutiable imports are used (Bairoch 1993, Table 3.1, p. 35). The share of manufactures in total imports (see Table 3.1) fell from 56.4% in 1820 (against a 5.8% share of manufactures in exports) to 24.1% in the period 1904–1913 (against a 28.3% share of manufactures in exports).

Earlier in the chapter, we referred to the theoretical displacement of imports through rising competitiveness as "dynamic substitution". This term was chosen to distinguish it from discredited strategies of activist import substitution. The changing structure of the USA's international trade over the course of the long nineteenth century is a tremendous empirical illustration of this concept, which we will return to again in the discussion of the industrialisation paths pursued by both Japan and China.

3.6 Conclusion

This chapter has served as a bridge between the "high theory" of Chap. 2 and the detailed empirical assessments of Japan and China that form the remainder of the work. As such, the chapter concerned itself with "sub-strategies", which describe how societies practically approach the task of raising living standards, given a set global technological paradigm. The analysis was limited to the strategic pursuit under the industrialisation banner. Ergo, the focus was on the manner in which societies industrialise and how they adapt their approach as comparative advantages develop and demand structures alter. With the forthcoming assessments of the Asian giants in mind, the frame of reference encompassed outward-oriented sub-strategies only, with an emphasis on latecomer societies.

The *Strategy Grid* was introduced as a powerful tool of strategic diagnosis and analysis.

The *Strategic Grids* of five important first- and second-generation industrialisers were discussed, viz. France, Germany, Britain, Russia, and the USA, with the chosen timeframe being the long nineteenth century. These short case studies served to illustrate the utility of the framework with real-world data. They will also serve to elucidate the forthcoming discussion of industrialisation sub-strategies in the context of the Asian giants.

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Chapter 4
Asia's First Industrial Giant: Japan's Strategic Pursuit

4.1 Introduction

Japan was the first nation outside of Europe and its settler economies to successfully pursue a primary strategy of technological change. In terms of observed ability to sustainably raise *O* in the long run, post-Meiji Japan is inarguably one of the most conspicuously successful societies of the industrial era. Japan doubled its relative GDP per capita between the Meiji restoration and the onset of World War II and then quadrupled it over 40 years from the post-war trough. By doing so it was able to join the frontier economies in the strategic core of the world system, once again as the first non-European or settler society to do so, while also spending a considerable period of time as the world's second largest national economy.[1]

Japan remains an important global entity, and it has retained its frontier status up to the time of writing, but it has also suffered through three deflationary "lost decades" in the 1990s, 2000s, and 2010s, with an associated unravelling of the strategic confidence that was so tangible as the economy crested. Japan's striking successes from the second half of the nineteenth century through 1990 or so and its subsequent deflationary struggles make it a tremendous test case for the application of the DST. Furthermore, its unique status as Asia's first industrial giant makes a detailed examination of its long-run industrialisation strategy a necessary stepping stone on the path towards a robust discussion of the future of Asia's second industrial giant, China. Ergo, this chapter is a vital link in the book, the ultimate objective of which is, of course, to assess China's ultimate prospects.

[1] The conventional timing of Japan's ascent to number two behind the USA is 1967, when the Japanese economy surpassed West Germany in size in 1990 international dollars. This ignores the fact that Maddison estimated that the USSR was the world's second largest economy right up to 1987. Japan's position under a market exchange rate weighting regime is even more impressive, as will become clear as the chapter proceeds.

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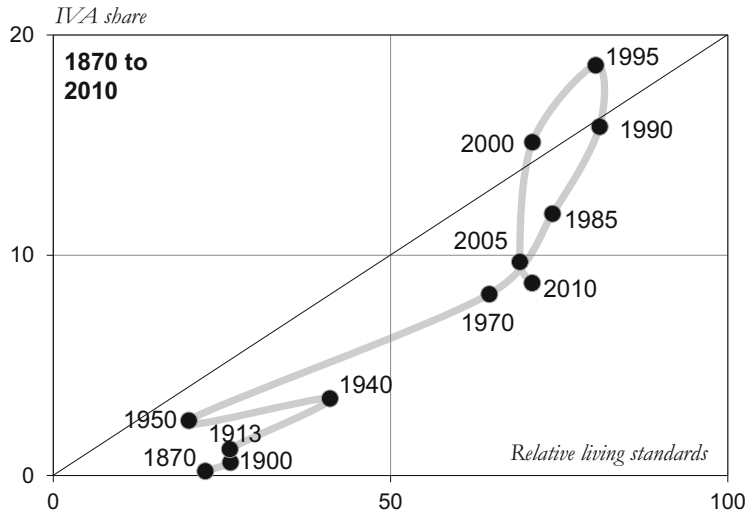

Fig. 4.1 Japan's IVA share and relative living standards: 1870–2010. Source: GDP per capita comes from Maddison (2009), with calculations by the author. IVA data up to 1971 from Rostow (1978, Table II–8, pp. 70–73; Table II–2, pp. 52–53), with more recent observations from the World Bank's World Development Indicators database, with calculations by the author. Rostow (1978, Table II–8, pp. 70–73) is also the source for pre-World War II export shares, with more recent observations from the World Bank's World Development Indicators database, with calculations by the author

This chapter is divided into two parts. The first applies the theoretical framework developed in the previous chapters to the Japanese industrialisation experience since the middle of the nineteenth century. The second draws out the salient lessons from Japan's long-run engagement with the GST with a view to enlightening the discussion of China that follows.

The first section—the application of the DST to the full sweep of Japan's engagement with modern economic growth—will initially consider the period between the mid-nineteenth century and World War II, during which Japan was able to double its relative living standard from around one-fifth of the frontier level at the beginning of the period to approximately two-fifths at the close (defined as the onset of hostilities, not their cessation). This will be followed by a detailed examination of post-war performance. While there was undeniably a considerable degree of continuity between the pre- and post-war industrialisation sub-strategies, from a DST perspective, the intimate subsidiary role played by conquest in the strategic mix evident in the former period, and its absence in the latter, represents a major structural break that demands separate treatment of the two eras.

Before proceeding under those auspices, it is a worthwhile preliminary to consider the entire period within the framework outlined in the preceding chapter. Figure 4.1 depicts Japan's share of world IVA from 1870 to 2010 on the vertical axis, while the horizontal axis measures Japan's GDP per capita relative to the

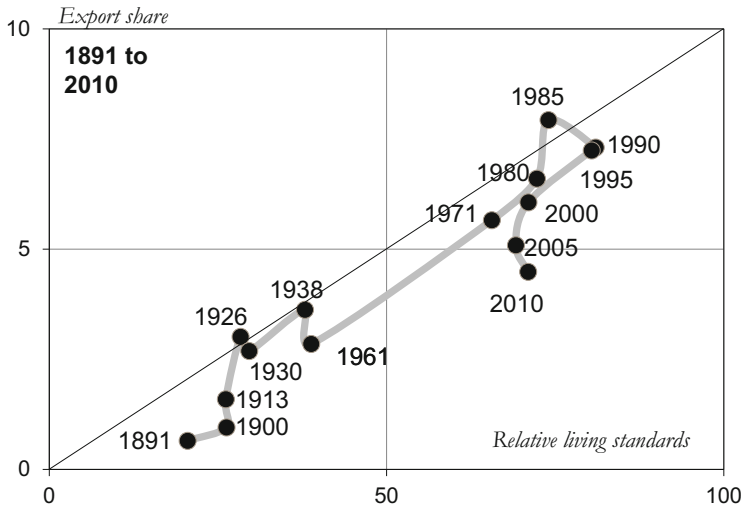

Fig. 4.2 Japan's export share and relative living standards: 1891–2010. Source: GDP per capita comes from Maddison (2009), with calculations by the author. IVA data up to 1971 from Rostow (1978, Table II–8, pp. 70–73; Table II–2, pp. 52–53), with more recent observations are from the World Bank's *World Development Indicators database*, with calculations by the author. Rostow (1978, Table II–8, pp. 70–73) is the source for pre-World War II export shares, with more recent observations from the World Bank's World Development Indicators database, with calculations by the author

frontier. Figure 4.2 measures Japan's share of world exports from 1890 to 2010 on the vertical axis, with the horizontal axis common between the two figures.

The curves in these figures will be broken down with the resulting phases considered chronologically in the following discussion, with a focus on the change in underlying sub-strategies and how remunerative each approach proved to be in the respective epochs. Our initial concern though is the very big picture. The strategic path traced by Japan over the entirety of its industrialisation drive is one of notable progress on the horizontal axis, with the majority of this progress representative of a balanced first-quadrant expansion. The major exceptions are, of course, the dramatic setback of World War II and the economy's protracted, and ongoing, post-1980s travails.

The dramatic relative advance in living standards between 1950 and 1970 (Fig. 4.1, noting that data availability regarding world export share restricts this phase to 1961–1971 in Fig. 4.2), is particularly visually striking. The lasso-like formations in the top right-hand corners of Figs. 4.1 and 4.2 also catch the eye.

Recalling the logic embodied in the schematics of the *Strategy Grid* in the previous chapter, a circular scatter plot—the lasso—implies that Japan's sub-strategies took it through all four quadrants during the period in the question. Fascinatingly, Japan traced this rough circle counter-clockwise when the vertical axis describes world IVA share in Fig. 4.1 and clockwise when the vertical axis describes world export share in Fig. 4.2. These results are clearly dripping with strategic

import, the specifics of which will become increasingly clear as the full curve is broken down into strategically pertinent epochs.

4.2 From Tokugawa Seclusion to Dynamic Latecomer and Imperial Power: 1850 to World War II

The Tokugawa shogunate ruled Japan from 1603 to 1868. For most of this period, the shogun ran the economy as a near autarky, with just a single, highly regulated trading window[2] with the Dutch East India Company and private Chinese traders open at Deshima (Nagasaki) from 1639 right up to the arrival of Perry's US Naval ships in 1853. That cathartic development led directly to the signing of the Kanagawa Treaty with the USA in 1854; the Ansei treaties of 1858 (treaties of "Amity and Commerce" signed with the USA, the Netherlands, Russia, England, and France); and the re-opening of additional foreign ports in 1859[3] (Baba and Tatemoto 1968, p. 163; Japan Customs 2015; Minami 1994, pp. 331–333).

The depth of Japan's isolation prior to these treaties is illustrated by the dramatically different exchange rates prevailing between gold and silver internationally and in Japan. Baba and Tatemoto (1968, p. 163) report that at the outset of international engagement, the gold/silver exchange rate was 1–6 domestically, whereas the prevailing international exchange rate was 1–15. Only an extraordinarily effective and draconian capital control regime would allow such a tremendous arbitrage opportunity to go unexploited. When the Ansei treaties determined that one gold *ryo* and one silver *ryo* would be exchanged one-for-one with their foreign equivalents, a rush to arbitrage the overvalued silver *ryo* commenced, which led to a significant outflow of gold reserves (Baba and Tatemoto 1968).[4] Agreeing to such an exchange rate testifies to a considerable financial naivety on behalf of the late Tokugawa administration, even making an allowance for the lack of leverage they exercised in the negotiations.

Immediately prior to its re-engagement with the global economy, in 1850 the Japanese generated a GDP per capita level that was 28.6% of the wealthiest economy of the day, which Maddison estimates was the Netherlands, which enjoyed a narrow advantage over the UK in that year. Immediately after the Meiji restoration, in 1870

[2] There were also trading links to Korea, whose Joseon dynasty sent numerous trade and diplomatic missions to the shogun over the course of the Tokugawa era. See Toby (1991).

[3] The official record of Japan Customs (2015) states that five ports, Nagasaki, Yokohama, Hyogo, Osaka, Hakodate, and Niigata, were opened to international commerce, whereas Baba and Tatemoto (1968, p. 164) refer to the "opening of three ports in 1859", without listing them. They go on to state that nearly 80% of trade went through Yokohama, despite Nagasaki's advantage as an already established hub.

[4] These administrated onshore exchange rates distorted the valuation of imports in this era, with economic historians later correcting official import data substantially higher as a result. See Baba and Tatemoto (1968, Table 6A1, p. 185).

Japanese relative living standards had declined to 22.5% of the wealthiest economy of the day (which Maddison estimates was Australia). That indicates that Japan's initial engagement with openness saw it experience a relative decline in living standards relative to the frontier. In absolute terms though, per capita GDP in Japan expanded by 8.6% between 1850 and 1870, a stark contrast to the situation in neighbouring China, where major civil unrest, displacement of domestic handicraft production by imports (Hou 2000, p. 2), amplified by the foreign privileges derived from extra-territoriality (Cassel 2012; Krasner 2001), and the costly indemnities extracted in 1842 and 1858–1860 all contributed to an absolute decline in GDP per capita of 11.7% in this period.

The extent of the decline in Chinese economic activity that was due to foreign influence is debatable, but it is unlikely to have been as important as home-grown factors. Recurrent political instability, most notably the Taiping Rebellion (Kuhn 1978), led to substantial direct and indirect loss of life as well as protracted disruptions to the agricultural and logistics economy (Maddison 1998, p. 47, Table 2.3). Economic mismanagement by a distracted Qing administration no doubt also played a large role. Feuerwerker (1984, p. 323) refers to the "shameful nineteenth century" presided over by the late Qing imperial bureaucracy. These matters will be dealt with in detail in the following chapter.

It is only relative to the rapid economic growth in Europe and its offshoots in this period (the 12 largest economies of Western Europe saw per capita GDP increase by 25.9% in this period) that Japan's performance appears lacklustre.

The performance looks even more creditable when one considers that the Ansei treaties removed Japan's tariff autonomy and introduced extra-territoriality (Baba and Tatemoto 1968, p. 164), which put domestic producers in direct, almost unfettered competition with imports from the leading industrial countries. Extra-territoriality was finally revoked in 1899, while in practice, from 1866[5] to 1911, Japanese producers operated with a very low rate of tariff protection. Duties on imported British cotton and woollen textiles were initially set as low as 5% (Baba and Tatemoto 1968, p. 164), while Lockwood (1968, p. 593) puts average tariff rates at no higher than 10–15% from 1866 until 1911. Therefore, Japanese producers were forced to sink or swim from the outset of the nation's international re-engagement, which necessitated an efficient allocation of resources/division of labour via the logic of comparative advantage, with an attendant focus on international competitiveness.[6] The close attention paid, out of necessity, to comparative advantage can be deduced from the undiversified nature of Japan's export and import trade throughout this period. The dominance of the silk and tea industries in the export basket from 1859 to 1867 and the dominance of processed textiles (cotton and wool) on the

[5] Note that the original treaties of 1858 were revised in this year to set the majority of import duties at 5% ad valorem. See Baba and Tatemoto (1968, p. 164) and Japan Customs (2015).

[6] Lockwood (1968, p. 539) argued that the tariff environment made direct subsidies a more critical form of industry support than might otherwise have been the case, with the pragmatic administration assisting producers to raise their competitiveness through cheap loans, export bounties, and technical assistance.

Table 4.1 Dynamic substitution in Japan, 1876–1940

Export share %	Food	Materials	Semi-manufactures	Manufactures	Other
1876–1880	38.1	11.1	41.6	4.7	4.5
1894–1898	15.1	10.7	44.3	26.5	3.4
1911–1915	10.8	7.9	49.5	30.4	1.4
1921–1925	6.4	6	47.8	38.6	1.2
1936–1940	9.9	4.3	26	57.4	2.4
Import share %	Food	Materials	Semi-manufactures	Manufactures	Other
1876–1880	13.5	3.7	27.2	52.1	3.5
1894–1898	23.2	22.5	18.2	34.1	2
1911–1915	11.7	52.2	18.3	17.1	0.7
1921–1925	14.1	49.3	18	17.9	0.7
1936–1940	8.7	51.1	25.7	13	1.5

Source: This table was originally published by the author in McKay and Song (2010, Table 3, p. 11). The underlying data are from Baba and Tatemoto (1968, Table 6–8, p. 177)

import side of the ledger (Baba and Tatemoto 1968, p. 165) illustrate this neatly (see also Table 4.1).

Quite remarkably given the inauspicious institutional setting for the tradable sector in the late Tokugawa period, Japan managed to produce a merchandise trade surplus from 1859 to 1866. That is even more remarkable considering that prohibitions were placed on the export of a key commodity in the form of silkworms, based on the misplaced idea that the inflation of the time was driven by foreign interaction [which was the genesis of the "expel the barbarians" sentiment of the time (Baba and Tatemoto 1968, p. 165; Stockwin 1999, p. 16)]. The reality, of course, was that poor fiscal/monetary management was clearly primarily responsible—with the recourse to the printing of unconvertible notes to meet rising government commitments being an obviously inflationary policy. This predilection for monetary financing of fiscal deficits continued beyond the restoration and the resulting inflation/currency debasement was only ended by the Matsukata reforms of the early 1880s (Lockwood 1968, pp. 13–14; Minami 1994, p. 16), which included the establishment of a central bank to control currency issue.

The trade position moved into deficit from 1867. The combination of the civil war that precipitated the restoration and poor harvests increased the import bill sharply, and given the narrow base used in the calculation of the official figures, which exclude freight charges and other "invisibles" such as insurance, in addition to public sector import transactions, the current account deficit (and the ultimate species outflow) was no doubt significantly larger than the reported merchandise position (Baba and Tatemoto 1968, p. 168).

Trade deficits persisted through the 1870s, although they narrowed in size over the course of the decade. Local producers gradually increased their ability to compete with imports while also improving the export performance of the traditional industries. This occurred against the backdrop of a monetary policy stance that was tightened towards the end of the decade (Minami 1994, p. 16), which suppressed

import demand. Demand conditions abroad also became progressively more supportive over the course of the 1870s, with the onset of a long global expansion following the turmoil of civil war in the USA and the wars of German unification/Prussian expansion in Europe that had dominated the prior decade.

Over and above the positive trends that emerged over the course of the 1870s, the monetary squeeze engineered by finance minister Matsukata in the early 1880s was a major factor in pushing Japan back into trade surplus. The domestic demand shock was such that imports took 5 years to reclaim their nominal 1881 level, while exports grew consistently, producing a sharp turnaround in the trade position, from large deficits to equivalently sized surpluses. Baba and Tatemoto (1968, Equations 1 and 2, p. 174) estimated that the income elasticity of demand for Japan's exports in the period 1876–1896 was 2.953, whereas the income elasticity of demand for imports was 1.852 for the same period.

Strategically speaking, the Meiji bureaucracy, and the national legislature,[7] played an important leadership role (Muramatsu and Pempel 1995). The state sponsored the process of industrial upgrading, establishing model factories on British, French, and German templates in cotton, silk reeling, and wool textiles, respectively; directly importing the capital equipment used in import competing activities for subsidised re-sale to private concerns; and also setting up its own enterprises in heavy industrial sectors deemed essential for national security purposes (Baba and Tatemoto 1968, pp. 169–171; Lockwood 1968, pp. 506–507). Quoting Lockwood (1968, p. 147) directly: "The state played a critical role...It reached abroad for the new techniques, shouldered the initial risks, and lavished rewards on those who followed—particularly where the urgent concerns of national defence were at stake".

Matsukata's public finance reforms, besides bolstering entrepreneurial confidence by reducing policy uncertainty, also included a programme of asset sales. These sales transferred a number of public enterprises into private hands at what are regarded as concessional prices, with some businesses that would later become household names as *zaibatsu* groups vaulting to greater prominence thereby (Morikawa 1970; Yamamura 1967). Further, the government's strategic rather than profligate use of the Sino-Japanese War indemnity, which represented a huge financial windfall,[8] in addition to providing privileged access to the resource wealth of north-eastern China, was clearly supportive of the industrialisation objective. The indemnity helped to underwrite an investment boom, with the government undertaking an ambitious 7-year programme of modernisation (large-scale investments in infrastructure, education, the financial system, the building of a steel mill at Yawata, and, not forgetting the subsidiary strategy in the aggregate mix, modernising the military's capability). This sparked a considerable increase in the confidence of the

[7] The Meiji constitution was enacted in 1889, while the bicameral National Diet was established in 1890. The former was modelled on the Prussian example (Stockwin 1999, p. 17)

[8] The indemnity amounted to 37 million pounds paid from 1895 to 1898, equivalent to 365 million yen against the cost of hostilities estimated at 200 million yen (Baba and Tatemoto 1968, p. 175).

private sector, as evidenced by a massive increase in the rate of new business creation. The country was also able to adopt the gold standard in 1897, leaving the indiscipline of the late Tokugawa, pre-Matsukata Meiji administrations behind.[9] On the industrial front, Japan achieved a trade surplus in cotton for the first time in 1897, a sure sign that its international competitiveness was on the rise (Baba and Tatemoto 1968, p. 175), as factory-produced cotton was the staple product of the first generation of European industrialisation (Mokyr 1990).

It was in this period that the empirical foundations for the "flying geese" model of latecomer industrialisation, first described by Akamatsu (1962), were put in place. The flying geese model posits that imports, domestic output, and exports within a particular industry sector follow a predictable relative time path, as does the transition up the value-added chain, which occurs across four stages.

The first stage is characterised by the import of manufactured consumer goods from the more advanced countries, with the purchase financed by the export of raw materials or culturally distinctive products. The second stage entails the local production of consumer goods, which requires the import of capital goods from the more advanced regions. In the third stage, the consumer goods industry develops into an exporter. This occurs once the domestic market is mainly serviced by local producers, with consumer goods imports from more advanced countries in decline. Simultaneously, the domestic capital goods sector begins to compete effectively with imports, which duly decline. The fourth stage entails a loss of competitiveness vis-à-vis less advanced latecomers in consumer goods and the rise of the capital goods industry as an exporter. Akamatsu's original illustration of the flying geese model is reproduced as Fig. 4.3.

In the previous chapter the term "dynamic substitution" (McKay and Song 2010) was introduced to describe the process whereby increasing international competitiveness brings about a material improvement in a nation's trade position as it simultaneously displaces imports at home and increases export market share in sectors where the nation was previously uncompetitive. On a broad sectoral basis, that tends to mean a move up the value-added chain from the export of primary products (food and/or raw materials, depending upon natural endowments), to semi-manufactures, to more elaborately transformed manufactures. The experience of the USA over the course of the long nineteenth century was outlined as the key example of this process (see Table 3.1). The equivalent statistics for Japan are reproduced in Table 4.1. Dynamic substitution can thus be understood to be describing the same underlying process as the "flying geese" model, minus the poetry, and with the additional benefit of an extra-Asian regional example set.

The process of dynamic substitution clearly contributed to the relatively low-income elasticity of imports that Baba and Tatemoto (1968, p. 174) estimated

[9] Lockwood (1968, p. 514) notes that Japan was not alone in using a war indemnity to adopt the gold standard. Prussia had done exactly the same thing with the Franco-Prussia indemnity. Note that the gold standard was not just a vehicle for domestic price stability. It was also a signal of prudence to the international capital markets in London, Paris, and New York: arguably serving a similar role to an investment grade credit rating today.

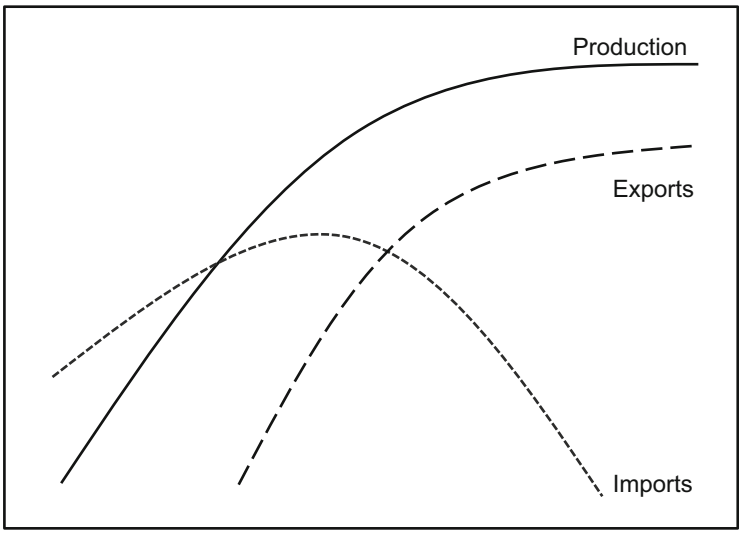

Fig. 4.3 The "flying geese" model of industrial development: schematic form. Source: Adapted from Akamatsu (1962, Figure 1, p. 12)

for the period from the middle 1870s to the middle 1890s. Manufactures comprised less than 5% of exports in the period 1876–1880 while representing more than half of imports. In the period 1894–1898, manufactures had increased to more than one-quarter of total exports while falling to just a little over one-third of imports (Table 4.1). From 1897 to 1913, the income elasticity of imports was less than unity (Baba and Tatemoto 1968, Equation 4, p. 178). These are dramatic swings that would be impossible for an open economy to achieve without a substantial move up the value-added chain and a concomitant increase in international competitiveness.

The primary strategy of technological change was clearly proving remunerative in the final decades of the nineteenth century. The subsidiary strategy of conquest, manifest in the propaganda slogan "rich nation, strong army" and the rise of the "Black Ocean" (established 1880) and the "Black Dragon" (established 1901) ultra-nationalist expansionist lobbies, rose against the backdrop of the successful industrialisation thrust. Somewhat later, the "co-prosperity" rhetoric was enacted in the same tradition. Japan's industrialisation pattern was thus intertwined with its conquest strategy. They were mutually reinforcing (Beasley 1987; Gordon 2000; Johnson 1982; Lockwood 1968).

Generalist studies of Japanese economic history tend to gloss over this aspect of the nation's experience (Lockwood 1968; Minami 1994), but in the DST framework, that would constitute an unforgivable abstraction. Japan's first foreign military adventure was to conduct its own version of gunboat diplomacy, extracting rights of extra-territoriality from the Qing-aligned Joseon dynasty in Korea in 1875, along with the opening of ports. Japan's treatment of Korea in this instance mirrored the way Japan was treated by the Western powers in the 1850s. Victory in its second

"adventure", the first Sino-Japanese War, garnered the nation major economic advantages, some of which are documented above. Two that have not already been mentioned were the immediate annexation of the island of Taiwan (under the Treaty of Shimonoseki) and the eventual control of the Korean peninsula.[10] This striking success was followed by a string of annexations and victorious campaigns in North Asia (including the seizure of Germany's Far Eastern holdings in World War I, Manchuria in 1931, inner Mongolia in 1936, the Korean peninsula and also certain mineral rights in northern China as spoils of the Russo-Japanese war of 1904–1905). Coastal China-at-large was occupied from 1937, followed by South-east Asia and the Pacific (including French Indo-China, British Malaya, the Philippines, and the Dutch East Indies, all during World War II).

Japan's resounding victory in the Russo-Japanese war (1904–1905) is a true landmark of global history—the defeat of a European power, Russia, by an emerging strategic state outside the European core. The Japanese victory encouraged Britain, the dominant naval power and the state with the farthest-flung imperial holdings, to shore up its reciprocal defence arrangements with the Japanese. These arrangements included an assurance that British Singapore would go unmolested. The global balance of power had an upstart new player (Dewey 1921), one with a rising industrial capability and a growing empire providing both raw materials and captive markets for Japanese producers.

Japan's opportunistic acquisition of Germany's Far Eastern territories while the Kaiser was distracted by his two-front war in Europe was mirrored by an opportunistic increase in the global market share of Japanese exports during the conflict. Japanese exporters saw their goods in rising demand in combatant markets, where civilian activity was redirected to the war effort, and they also acquired market share in the economies of non-belligerents where the combatants had withdrawn (Lockwood 1968, pp. 312–318).

The changing structure of Japanese trade (Table 4.1) in the interwar period is telling. It speaks of a tremendously successful industrialisation path. The share of manufactures in Japan's exports increased from a little under a third in 1911–1915 to a little under three-fifths in 1936–1938. Manufactures declined to just 13% of total imports in 1936–1938. The share of non-food raw materials in its imports had increased to around one-half during World War I and remained steady around that level during the interwar period. A rapid electrification, railroadisation, and motorisation[11] was simultaneously achieved (Minami 1994, pp. 20–22; pp. 131–133, Table 4.1), alongside a large-scale rural–urban, primary–secondary transfer of the workforce (Minami 1994, Table 9.1, Panel C, pp. 212–213), each of

[10] Japanese control over Korea following the defeat of Qing China was annulled by the intercession of European Powers, who gifted the territory, mineral rights in northern China, and the vital Port Arthur hub, to the Russians. Japan then defeated the Russians on land and sea in 1904–1905 and assumed control of Korea as a protectorate in 1905, ahead of full annexation in 1910.

[11] The term "motorisation" encapsulates both the increase in the vehicle stock per capita and the increasing density of the road network, traditionally scaled by volume or land area or the number of vehicles. See the discussion in McKay (2012).

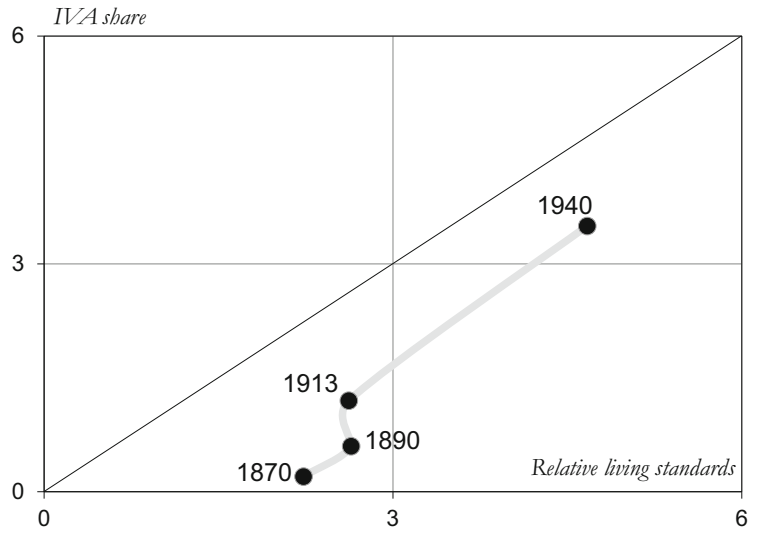

Fig. 4.4 Japan's IVA share and relative living standards: 1870–1940. Source: As for Fig. 4.1

which gave impetus to the nation's central strategic thrust (McKay 2007a) and sponsored large, durable gains in productivity levels. Lockwood (1968, p. 122) reports that Japanese output per worker increased from 100 in 1910–1914 to 263 in 1935–1938,[12] while real wages increased by 66% between 1914 and 1937 (Lockwood 1968, p. 144).

To quote Lockwood again, "In short, the world economy of 1868–1938 enabled Japan to reap the fruits of international specialisation on a large and increasing scale" (1968, p. 319). Further, the domestic aspects of the industrialisation process and the supportive role played by the expansion of empire interacted synergistically with global factors, resulting in an almost unrecognisably wealthier average Japanese citizen in both absolute local and relative international terms in 1938 vis-à-vis the situation prevailing at the onset of international re-engagement, which was precipitated not by choice but by the threat of foreign gunboats.

It is now time to turn back to the *Strategy Grid*. Figure 4.4 depicts Japan's world IVA share between 1870 and 1940 on its vertical axis. Figure 4.5 depicts Japan's world export share on its vertical axis. The two figures have a common horizontal axis: the now familiar ratio between income per capita in the nation under consideration and the level prevailing at the global frontier at each point in time. Note that data availability has created a slightly different set of paired

[12] The underlying changes were total industrial production increased from a base of 100 to 600, while the number of workers increased from a base of 100 to 228. Note also that the workday was reduced by around 10% in that period, so output per hour worked increased even more than the 163% reported in the text for output per worker.

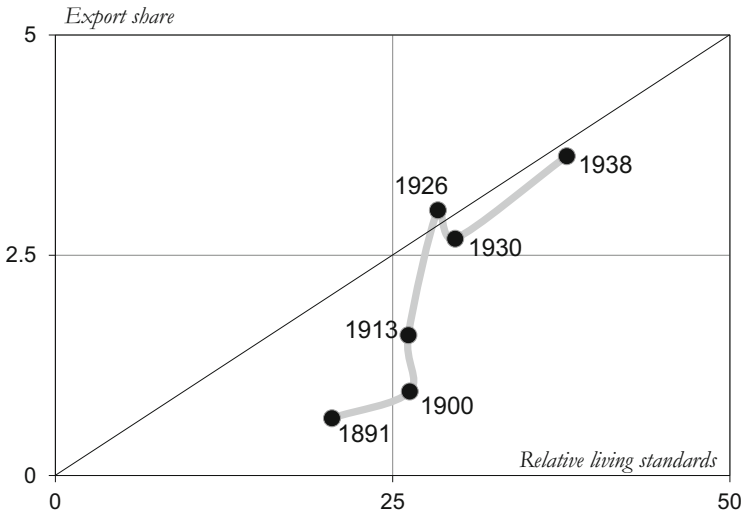

Fig. 4.5 Japan's export share and relative living standards: 1891. Source: As for Fig. 4.2

observations in the two figures, which means that the strategic kinks nominally appear to occur in slightly different years.

The two figures both indicate that Japan was pursuing a desirable, balanced first-quadrant strategy up to 1900. Japanese living standards were growing more rapidly than the frontier, as illustrated by the progress on the horizontal axis, and it was increasing its share of world IVA (Fig. 4.4, 1870–1900) and exports (Fig. 4.5, 1891–1900) while doing so. The robustness of the nation's industrialisation sub-strategy during this phase is plain to see.

The period from 1900 to 1913 has a different flavour. Here the scatter moves vertically in both figures. Recall that in the previous chapter there was an extended discussion of the abstract *Strategic Grid* of Fig. 3.2, which depicted vertical and horizontal deviations from a previously balanced path. It was argued that a kink that takes the economy in a vertical direction (i.e. no progress on the horizontal while gaining global market share) indicates a move towards an unbalanced, externally dependent strategic posture. Indeed, the vertical kink was seen as an imminent threat to the sustainability of growth: a potential harbinger of exhaustion.

That does not need to be the case in all instances, of course, as it is what happens at the next strategic kink—which quadrant the economy passes through in the succeeding phase—that matters in the long run, not the temporary stability in the economy's rate of catch-up to the frontier. Focusing attention on Fig. 4.5, which has two observations between 1913 and the endpoint, whereas Fig. 4.4 has none, Japan tilted backed from the vertical into the first quadrant between 1913 and 1926, but just barely.

There are, however, a number of factors specific to this era that allow for a justified qualification of that observation. The first is the particular circumstances of

World War I that created an incentive for Japanese producers to prioritise export markets, as already remarked. The second is the extraordinary setback represented by the Great Earthquake of 1923. The third is the unsustainable credit bubble that drove the US economy for much of the 1920s, which generated unusually fast growth in the frontier during this phase. Abstracting from the apparent fourth-quadrant (domestic demand-dependent) kink from 1926 to 1930, Japan was able to revert to a more balanced—and distinctly remunerative in terms of living standards—strategic posture in the period from 1930 to 1938.

In his influential study of Japanese development from 1868 to 1938, Lockwood (1968, Note 2, pp. 308–309) states that it was "commonplace" for Western observers to hold the misconception that Japan was dependent on export growth through its pre-war rapid development phase. Lockwood came down hard on this "misconception" with some telling empirical points. As a consequence, the consensus view has moved decisively away from the export-led hypothesis (Blumenthal 1972; Bronfenbrenner 1961; McKay 1999, 2007a, b; Minami 1994; Ohkawa and Rosovsky 1962). Lockwood (1968, p. 309) argued that ". . .the idea that the drive for foreign markets was *the* motor force of Japanese industrialisation is nothing but a literary invention. It has little relationship to the facts" (Emphasis in original); "If Japan's overseas market expanded, so too did her home market. The latter remained at all times far larger in scale. Changes in domestic habits and tastes, and in the investment requirements of home industries, reacted upon employment and income to a much greater degree than did foreign demand for Japanese goods. Some of Japan's imports went into the processing of manufactures for export; but the greater part were consumed at home" (Lockwood 1968, p. 309); and "To suppose that a country can build a great overseas commerce in manufactures on the foundations of an economy otherwise reconstructed and stagnant is to ignore all the lessons of history" (ibid).

These arguments are an eloquent statement of the difference between outward orientation, where international competitiveness is vital, where firms are ultimately indifferent between sales at home and abroad, and the nation is ultimately indifferent whether it runs modest deficits or surpluses, and export dependence, which is highly vulnerable to exogenous shocks on any number of fronts, and has mercantile overtones, with an associated focus on achieving a trade surplus, which implies a preference for offshore sales.

Having already qualified the literal interpretation of the 1900–1926 period, it is fair to consider whether unrepeatable special factors may have produced the apparently robust relative performance in the 1930s. The two most obvious factors are that (a) Japan had what might be regarded as a "good" Great Depression and (b) Japan's imperial activities gave it an additional source of markets and growth at a time when the leading industrial nations, including the frontier-defining USA, were in genuine difficulty due to the negative legacies of a turbulent century-to-date that were bequeathed to the 1930s.

Regarding the Great Depression, Japan's early abandonment of the gold standard and the subsequent sharp fall in the yen gave its tradable sectors a clear advantage in the recovery phase vis-à-vis longer "holdouts" (Eichengreen and Sachs 1985).

Lockwood (1968, pp. 117–118) notes that while Japanese industrial production grew roughly twice as fast as world industrial production between the restoration and 1938, two concentrated relative spurts explain most of the ultimate outperformance: World War I and the Great Depression.

Regarding the imperial angle, as indicated above, Japan annexed resource-rich Manchuria in 1931 and Inner Mongolia in 1936 and then invaded China-at-large in 1937. The Korean and Taiwanese colonies represented a combined market that was about one-sixth the size of the GDP of Japan proper in 1938 (Hara 2000, p. 227). The raw materials supply and the markets of the "yen bloc" were essential for the manufacturing complex. However, they do not seem to have been decisive in the first half of the decade (prior to the institution of foreign sanctions) when the relative shift in competitiveness is caused by the exchange rate, which shows up robustly in cross-country studies of relative economic growth during the 1930s (Eichengreen and Sachs 1985), and the compelling logic of productivity and real wage gains (see discussion above) that are the co-requisites of successful civilian industrialisation.

4.3 From Being a Miracle to Needing One?[13] Japanese Strategy from 1950

In the six completed decades since the end of World War II, the Japanese economy represents a fascinating example of breathtaking economic rise and then abrupt decline. In the first third of this period, the economy produced the most protracted phase of very rapid growth the world had seen up to that time. In the middle third of the period, the absolute growth rate slowed, but Japan continued to outstrip the frontier economies—the first- and second-generation industrialisers—and secured its membership of the strategic core. In the final third, Japan was a laggard even against this mature peer group, suffering a unilateral, economy-wide deflation in tandem with relative real stagnation.

The aggregate strategic mix, Φ, was essentially constant through the entire period—with an enthusiastic embrace of the technological strategy under the security sponsorship of the USA—with a subsidiary strategy of commerce supplanting the militarism that characterised Japan's rise in the preceding phase, as detailed above.

This section of the chapter will chronicle Japan's sub-strategic path and choices through the revitalisation of the 1950s, the golden 1960s, the volatile 1970s, the roaring 1980s, the dismal 1990s, and the depressing 2000s.

Japan doubled its share of global output in the three decades from the beginning of the Korean War and quadrupled its relative living standard vis-à-vis the frontier over four decades from the same starting point. Over the same timeframe Japan was able to more than triple its share of global exports. In 1950, Japanese income per

[13] This heading borrows the clever sub-title of McLeod and Garnaut (1998).

capita had fallen back to just one-fifth of frontier level, from around two-fifths immediately pre-war. The 1950 starting point was an equivalent relative position to that pertaining a century earlier, pre-international re-engagement, as documented above. From that starting point, Japan produced a remarkable outpouring of economic growth over four decades as it re-oriented its strategic mix from technological change allied to militarism to an unmitigated pursuit of the former.

In the 10 years to 1960, Japan's labour productivity gap with the USA closed by an average of 1½ percentage points per year. In the following 10 years, the gap closed at the accelerated pace of just under three percentage points per year. By 1990, Japanese GDP per capita had reached 81% of the US level, clearly exceeding the threshold required to be classed as a member of the strategic core of nations ensconced at the global technological frontier.

The Japanese post-war experience up to 1990 illustrates that a combination of strategic leadership pursuing a clear objective, the utilisation of a backlog of readily attainable technology, ample labour supply, and the economies of scale emerging from outward orientation at a time of buoyant global growth can be an expansionary elixir. In short, Japan was a vivid example of the potential benefits to be harvested from discretionary participation in the GST, and an enormous beneficiary of the pro-cyclical dynamics embodied in the *Strategic Alternator*. Post-1990 though, when the reality that the 1980s boom was actually one of history's greatest bubbles (Kindleberger and Aliber 2005) set in, the pro-cyclical dynamics began pulling the other way, generating a recursive deflationary spiral from which the society is yet to escape. The abruptness of this turnaround in prospects is both a stern test for any theory of economic growth and the business cycle and the perfect canvas upon which to illustrate the bona fides of the DST.

4.3.1 The 1950s and 1960s

Unconditional surrender to the Allied forces in 1945, and the subsequent dismantling of the constitutional infrastructure of the militant polity, signalled the formal exhaustion of the once lucrative dynamic strategy that had doubled Japan's living standards relative to the frontier. The economy emerged from the conflict with a drastically depleted capital stock, an enormous loss of life,[14] and also a loss of its imperial holdings, where its international trade had become increasingly concentrated (Hara 2000, Table 6.5, p. 232). Hara (2000, Table 6.14, p. 263) reports that 25% of the housing stock was destroyed, as was 34% of industrial machinery, 15% of the telecommunications capital stock, 81% of shipping, 22% of the vehicle stock, and 7% of the rail network. Maddison estimates that annual output in 1945 was less

[14] Hara (2000, Table 6.9, p. 253) put the deaths of military personnel at 2,121,000 (cumulative). Civilian "excess deaths" accounted for slightly more than that, bringing the loss of life to around 4.6 million (Hara 2000, p. 254).

than half what it was the year before, while the total population declined by some 954,000, or 1.2%. Other researchers broadly agree [see the multiple estimates presented by Hara (2000, pp. 225–233)], with the collapse in munitions production the key discontinuity in the manufacturing implosion.

Looking ahead to the potential of the post-war civilian economy though, Japanese industry in 1945 should be viewed as wounded but not wholly incapacitated. The rapid deepening of the industrial capital stock (equipment and tools) between 1935 and 1945 meant that even with the above losses, the stock still only reverted back to the level pertaining at the opening of the period (Hara 2000, p. 262). The continuity of the basic elements of the industrial complex pre- and post-Occupation has been noted by many scholars of firm structure, state–industry relations, and corporate governance (Bisson 1954; Johnson 1982; Schaude 1994), despite the efforts of the Allies to dismantle the *zaibatsu* (Hadley 1970). Equally, the elite bureaucracy that had so ably steered military-industrial development in practical and ideological terms was still basically intact (Gao 1997; Johnson 1982; Muramatsu and Pempel 1995), which provided a vector for strategic leadership to re-emerge.

Following a short period of economic difficulty (including very high inflation) under Allied occupation, Japan was able to quickly rise from the mire due to the aforementioned continuity. The Korean War of 1950–1953, with its broad global political implications and the immense procurement demands that sprung from it, was a major demand catalyst. In the first four and a half decades of the twentieth century, Japan's strategists—business and the state—had been bound together by confidence in the overarching technological-imperial strategy. In the 1950s, strategic confidence in a new approach to industrialisation would again furnish a productive state–industry alliance in Japan (McKay 1999). The altered strategy was to re-enter into the GST, doing so under the technological and security sponsorship of the USA, with conquest constitutionally erased from the strategic mix.

The first point of order was to leverage off Japan's existing light and heavy industrial labour force while replacing destroyed and redundant capital stock with the best technology available. The state provided strategic leadership by channelling what was then scarce capital into priority uses that were in accord with the peaceful industrialisation strategy (Calder 1993; McKay 1999). The enormous investments this policy accommodated meant that Japan's basic materials industries were able to derive huge economies of scale, thereby establishing their international competitiveness.

Japan's downstream manufacturing producers were therefore able to consume competitively priced intermediate goods, helping them to lift their own competitiveness relative to imports and enabling them to build global market share. The resulting foreign exchange earnings from exports (controlled by the Ministry of

Finance under surrender requirements at this stage)[15] and the foreign exchange that was not being expended on finished manufacturing imports, due to more effective competition from home firms, could then be deployed to access imported technology. This enabled firms to progressively move up the value chain and increase their productivity levels. As the demands of downstream manufacturers grew, upstream sectors felt comfortable adding even further capacity, with domestic financing readily available from the private sector banks, public development institutions, and quasi-budgetary funds (Calder 1988, 1993; Johnson 1982). This is a clear example of the interaction of strategic leadership and strategic organisations on the demand side unlocking latent potential in the supply side of the economy. It is strategic confidence, via the microeconomic dynamics of the *Strategic Alternator*, producing a virtuous circle of self-sustaining economic growth.

The technology required for upgrading the capital stock was easily acquired by import. Much of that technology came from the USA, which felt an economically strong (if militarily emasculated) Japan would become a highly valuable Cold War ally in the potentially volatile north-east Asian crescent (Calder 1995). The majority of Japan's import basket comprised capital goods, energy, and other raw materials. Japan also paid substantial royalties and licensing fees for access to foreign intellectual property, which was absorbed and then developed incrementally by indigenous firms. Japan's approach of procuring technology directly, rather than absorbing the large foreign direct investment (FDI) inflows that would later characterise many of the industrialisation sub-strategies pursued elsewhere in Asia, is an important point of differentiation. The contrast with China's approach, at least in its initial decades of GST engagement, will be highlighted subsequently.

The misconception that Japanese economic development was export-led in the first phase of industrialisation was dealt with in the prior section. Despite the clear rejection of this proposition for the earlier phase when the economy was narrower and less sophisticated, the idea that Japan pursues an export-led growth model has resurfaced periodically in the policy debate in the post-war period. The reality is that throughout the various phases of its remarkable periods of growth, the economy has been oriented outward but was not export-dependent.

Japan consistently ran a deficit on its international trade through the 1950s, 1960s, and the first half of the 1970s (Fig. 4.6). Japan's national accounts report a deficit on net exports for 87 consecutive quarters from March 1955 to September 1976. Over this period, private domestic demand grew at an impressive average rate of 8.8% per annum. Export and import growth were both higher at 13.7% and 13.2%, respectively, but the domestic economy was still growing at a much faster pace than the rest of the world. The export share of GDP rose from approximately 3% in 1955 to 8% in

[15] Japan's *Foreign Exchange and Trade Control Law* was revised in December 1980 to make foreign exchange transactions "free in principle". The real demand criterion for foreign exchange transactions was dropped in 1984. Prior to these revisions, any foreign exchange transaction theoretically had to be approved by the Finance Ministry. See McKay (2004). For a narrative of financial reform, see Brown (1994). For detailed discussions of changing exchange arrangements, see Aramaki (2006) and McKay (2014a).

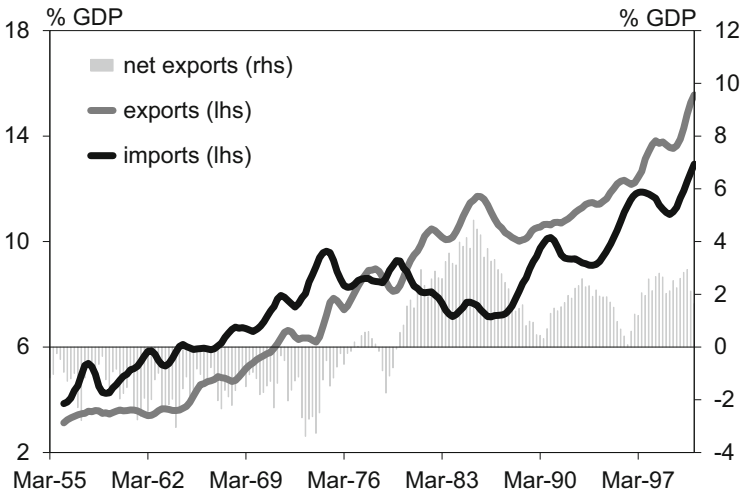

Fig. 4.6 Japan's international trade from 1955. Source: Underlying real data (base year 2000) from the CEIC database, with calculations by the author

1976. In the same time period, the import share rose from approximately 4% in 1955 to 8% in 1976. In other words, Japan's post-Korean War trade deficit of 1% of GDP took two decades to erase. Japan exhibits a clear outward orientation in this period, but it was certainly not export-dependent.

The fact that Japan's economy was not export-dependent does not mean that it was particularly balanced. The supra-normal development of Japan's industrial complex under the broad strategy of outward orientation left other areas of the economy under-developed. Channelling funds to strategic industries on a preferential basis requires another domestic sector (or the rest of the world) to provide funds on a disadvantageous basis—a financially repressive regime (McKinnon 1973) is required.

It is domestic agents over whom the strategic leadership exercises leverage that are the only realistic candidates for this funding role. The observed home bias of investors (French and Poterba 1991; Lewis 1999) implies that offshore funding is not to be consistently relied upon to fund a long-term strategic imperative reliant on an artificially low cost of capital. An industrialisation strategy obviously demands that ample cheap funds be made available to the corporate sector. The household sector, the critical saver and ultimate lender in the economy, is thus the default candidate to be "taxed" through repressed returns on their savings, and/or an artificial inter-sectoral terms-of-trade, to sponsor outward-oriented industrialisation.[16]

[16]This is a variation on the "Old Bolshevik" notion of primitive socialist accumulation via strategic sectoral price distortions associated with Preobrazhensky (1967) and Bukharin. Obviously, the Soviet schema stopped at the border, being a simple closed economy urban–rural model. This theme

Marxist scholars have argued that Japan's post-war strategic leadership sided with capital over labour (Seiyama 1989). More subtly, it can be argued that Japanese welfare capitalism developed under a system of indirect transfers to labour intermediated by capital (McKay 1999, 2007a, b). Strategically speaking, this distinction matters, as will become clear once the discussion extends to the 1970s and beyond. For the moment, the pertinent fact is that a state–business alliance—a strategic leadership accommodating private strategists and their organisations—existed, and its principal focus was to skew the allocation of resources towards industrial capital formation, in pursuit of the scale and frontier technology required to achieve and sustain international competitiveness, and ultimately to raise aggregate living standards to those enjoyed by the strategic core.

One element of this proposition can be illustrated by an examination of the terms-of-trade faced by the household and corporate sectors.[17] Tremendous real economic growth in Japan was accompanied by a sustained rise in the aggregate consumer price level. Japanese consumer prices rose at an average annual pace of 5.6% in the 1960s, against a 2.8% average in the USA. Japanese inflation accelerated to 8.9% in the 1970s, against a 7.7% average in the USA. Japan's consumer price level rose by a cumulative 277% over two decades, against a 145% expansion in the USA. So, Japanese firms were able to consistently raise the price of that portion of their output consumed by domestic households.

To proxy the inter-sectoral terms-of-trade, we can contrast the 5.6% rate of increase in consumer prices in the 1960s to the performance of the producer price level. Producer prices rose just 0.9% per annum in that decade. A huge profit margin for the corporate sector is apparent. The comparable figures for the USA in the 1960s are 2.8% (consumer prices) and 1.7% (producer prices), a substantially narrower margin. Over the two decades from 1960 to 1980 Japan's producer price level rose at an average of 4.0% per annum against a 7.3% lift in consumer prices. The respective US data are 4.8 and 5.2%. Japanese firms were consuming super-normal profits in this 20-year period. They clearly enjoyed substantial pricing power at the retail level: at the expense of households. The combination of external market share gains and a captive home market that expanded relatively rapidly was an immensely profitable combination.

These conditions mirror those required to generate positive pro-cyclical dynamics from the *Strategic Alternator*. In the Japan of the 1950s and 1960s, these relationships were illustrated vividly. Financial repression (McKinnon 1973) kept the interest rate at a low level relative to the rate of return on pro-strategic projects, while profitability was underpinned by an attractive profit margin for downstream firms and by productivity enhancing economies of scale in capital-intensive upstream sectors. Persistent price increases in the assets furnished as collateral by

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will naturally be revisited when the discussion turns to the industrialisation model of the People's Republic of China.

[17] All price data in this section is sourced from the OECD's *Main Economic Indicators* database accessed via the EconData subscription software package.

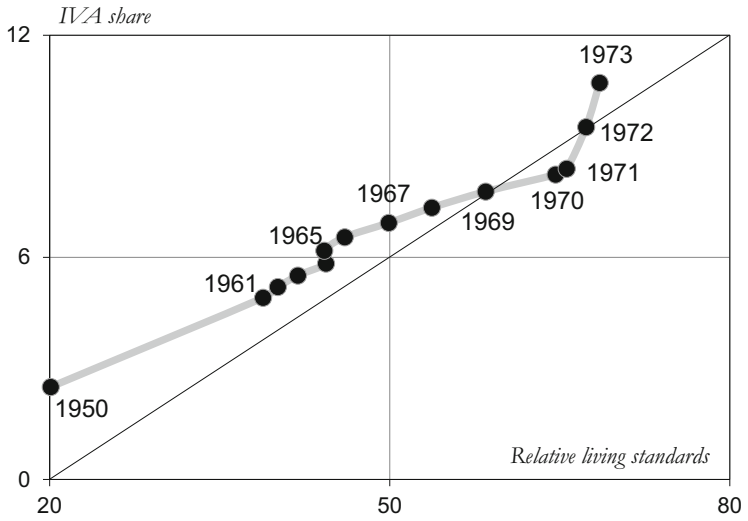

Fig. 4.7 Japan's IVA share and relative living standards: 1950–1973. Source: As for Fig. 4.1

prospective borrowers reinforce confidence in the underlying choice of strategy. Land prices rose at a healthy pace through the second half of the 1950s and throughout the 1960s. The presence of strategic confidence among the strategic leadership and the various clusters of strategic organisations was reinforced by the extremely consistent price signals detailed above. That sparked and sustained the process of strategic imitation, which encouraged the mobilisation of more and more capital for the strategic pursuit as societal confidence in the strategy accumulated. Successful strategists—both pioneers and imitators—generated large and consistent surpluses.

Japan's strategic outcome initially exceeded the most bullish expectations. Figures 4.7 and 4.8 plot Japan's outward-oriented industrialisation pattern in the period up to 1973. The paired export series began in 1960 due to a lack of data on export shares prior to that year, while the first observation in the IVA *Grid* is 1950. The data argue that Japan was the poster child for the outward-oriented "path from the periphery" (Haggard 1996) in the 1950s and 1960s, exhibiting a first-quadrant strategy throughout. In Fig. 4.7, progress on both the vertical and horizontal axes was essentially uninterrupted throughout the era. In Fig. 4.8, a couple of cyclical hiccups before the early 1970s are discernible, but nothing that was sustained, and therefore did little to harm overall strategic confidence.

In the 11 years to 1961, Japan's income gap with the USA closed by an average of approximately 1¾ percentage points per year, while its share of world IVA doubled, from 2½ % to around 5% (the schedule between the 1950 and 1961 observations in Fig. 4.7). In the following 9 years, which comprise the first nine observations in Fig. 4.8, the income gap closed at the accelerated pace of just under three percentage points per year. Japan rose from an income level of around one-fifth of the USA

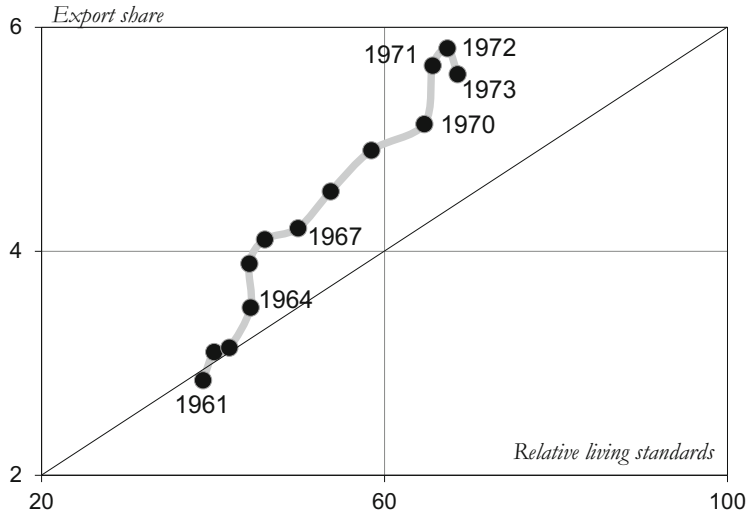

Fig. 4.8 Japan's export share and relative living standards: 1961–1973. Source: As for Fig. 4.2

under Allied occupation, to two-fifths of the USA in 1960 (completing the recovery back to the interwar peak), to a level of almost two-thirds just 10 years later. Also, Japan's share of world exports increased by a factor of 1.8 in this amazing decade (2.8–5.1%), while its share of world IVA rose by a factor of 1.7 (4.9–8.2%). In summary then, Japan's peaceful industrialisation strategy in the 1950s and 1960s was extraordinarily remunerative in terms of relative living standards. The sub-strategies underpinning this success were consistently pushing through the first quadrant, which is indicative of balance and thus durability.

4.3.2 The 1970s Onwards

After 1970, we can see a different pattern emerging after the golden decade of the 1960s. The first half of the decade saw a number of external shocks impinging on Japan's sub-strategy. The collapse of the Bretton Woods exchange rate system and the US dollar devaluation it entailed were a competitive jolt for Japanese producers. The oil supply shock arrived soon after, which was a particularly challenging event for resource-poor, but energy- and metal-intensive, Japan. Furthermore, with Japan's past success having accumulated to the point where the nation was on the cusp of high-income status—i.e. membership of the strategic core of nations that operated at the frontier—in addition to the fact it was now the second largest national economy in the capitalist world (see footnote 1 in this chapter), Japan's leadership and its private strategists were beginning to confront the fact that growth would be progressively harder to come by than heretofore.

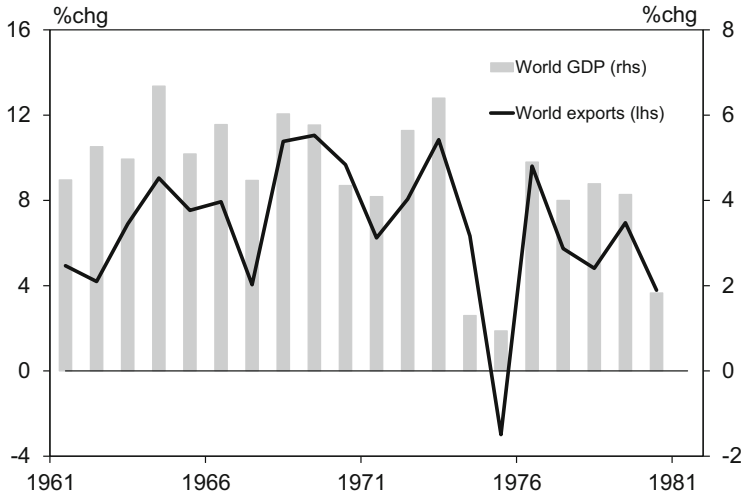

Fig. 4.9 World export and GDP growth in the 1960s and 1970s. Source: World Bank World Development Indicators database

Compounding each of these factors, and in some cases deriving from them, what had been an exceptionally benign international demand climate became decidedly fractious. The world economy had expanded at an average pace of 5.2% per annum in the 1960s. The volume of world exports grew even faster at 7.6%. Exports grew by an average of 8.7% in the second half of the decade. In the first half of the 1970s, world growth decelerated to 3.6% per annum and world export volume growth decelerated to 5.7%. Export volumes declined outright in 1975. They had never expanded at less than a 4% annual pace in the 1960s (Fig. 4.9).

The stupendous advance of Japan's strategists through the second half of the 1960s was interrupted by the cumulative force of these adverse events. Japan's world export share declined in successive years in 1972 and 1973. The income gap with the USA widened in a material fashion in 1974. Industrial production had increased fivefold between 1960 and 1974. It declined by more than 20% peak to trough in 1974–1975.

These developments were understandably damaging for strategic confidence. The global terms-of-trade had shifted radically against resource-poor countries. The ample supply of cheap imported fossil fuels that had been an important source of strategic confidence in energy-intensive heavy industrial development was no longer guaranteed. In tandem with the abrupt decline in the rate of expansion of global demand, and the considerable uncertainty that came with the radical shift in the international financial architecture as Bretton Woods broke down (McKay 2014a, b), the 1970s asked a severe question of Japan's prevailing sub-strategy.

In the second half of the 1970s and the first half of the 1980s, Japan managed to resume building global market share. The economy also began producing consistent trade surpluses for the first time in the post-World War II era. However, its rate of

catch-up to US income levels slowed to an average of just 0.6 percentage points per annum in the 10 years to 1985. In the second half of the 1980s that improved marginally to a catch-up rate of 0.9 percentage points per annum. Neither period came close to replicating the figures of the 1960s.

The move to consistent trade surpluses was enabled by a number of factors. One was the increasing sophistication of Japanese technology. The move up the value-added chain meant that Japanese capital goods and high-end consumer durables reached a point where they were reasonable substitutes for American and European imports. As these goods became acceptable as import substitutes, they also became potential exports. So, Japan began exporting goods they used to import while knocking competitors out of the local market. Indigenous innovations in the manufacturing process and in intra-firm information flow, well documented in the business literature (Aoki and Dore 1994; Fuss and Waverman 1992; Tipton 2007; Vogel 1979, 1985), were the finishing touch. This is the classic "dynamic substitution" scenario, or a combination of stages three and four in the wild geese formulation (see the commentary earlier this chapter, alongside Table 4.1 and Fig. 4.3).

The second factor was that the energy intensity of the Japanese economy had fallen, reducing the import bill for every extra unit of output in the resource-poor country. This was achieved through greater efficiency in the use of energy following the jolt of the oil crisis of 1973 and the favourable influence of the increasing importance of the services sector in overall activity. Structural change, raw materials intensity, and emissions per capita are formally related by the environmental Kuznets curve (Grossman and Krueger 1995; McKay 2008) and the Kaya identity (Kaya and Yokobori 1997). The argument here is that Japan made discretionary decisions to reduce energy intensity at the same time that developmental gravity began exerting pressure in the same direction.

The third development was that Japanese goods made a social breakthrough with Western consumers. In the 1960s, the phrase "Made in Japan" was a euphemism for cheap and low quality. Export market share gains were often the result of being the cheapest rather than the best. It took a long time for Japanese goods to lose this stigma. However, the fact that the social turning point came when a price advantage was still readily apparent, most visibly in automobiles and electronics, meant that exports were able to maintain a high rate of growth just as imports were slowing for the reasons expounded above.[18]

Fourth, a sharp decline in the investment to GDP ratio from 36.5% in 1973 to 30.5% in 1978 was not matched by a similar drop in the savings rate. Domestic savings to GDP fell from 1973 to 1975 but stabilised between 32½ and 33% of GDP for the next 3 years. Three decades before the term "savings glut" entered the

[18]It is the author's opinion that South Korea has reached a similar point with its consumer electronics sector, while its automobile industry still has a little way to go. The question of South Korea's strategic pursuit is a fascinating one that sits between the Japanese and Chinese experiences. For a survey of consumer attitudes towards the "Made in . . ." label across various sectors, see Future Brand (2014).

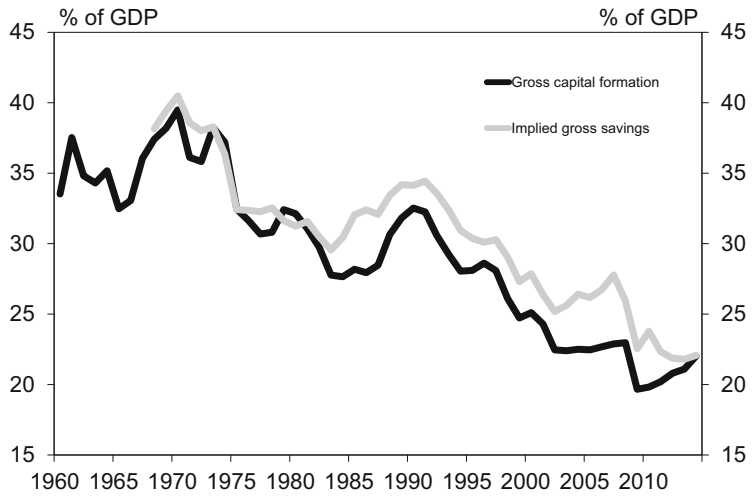

Fig. 4.10 Gross investment and gross savings: Japan. Source: OECD Economic Outlook database, with calculations by the author. Note: "Implied gross savings" is the sum of gross capital formation and the current account balance

academic and policy lexicon in the post-Asian crisis world (Bernanke 2005), Japan was arguably pioneering the concept.

As stated above, Japanese gross fixed capital formation peaked as a share of GDP in 1973. It has been in trend decline since, even when the late 1980s bubble period is taken into account (Fig. 4.10). Unsurprisingly, capacity utilisation rates in the manufacturing sector also peaked around this time. This major shift in the demand for capital investment initially reflected a loss of short-term strategic confidence. It eventually developed into an extremely painful episode of strategic exhaustion, policy error, failed adaptation, and economy-wide deflation.

A "savings glut" derived from a step wise decline in the investment share and more resilient savings is a strong indicator of a decline in strategic confidence. The forces at play in the Strategic Alternator under such circumstances are adverse. Lower strategic confidence drives a reduced expectation of future returns to capital, a lower willingness to borrow and lend, and a reappraisal of *ex ante* asset valuations. This feeds directly into lower rates of resource utilisation and a higher rate of precautionary savings by households. Furthermore, firms increase their own savings rate by retiring debt rather than accumulating it, deferring investment, and increasing their holdings of cash. That impacts on their employment plans, which undermines household confidence further, which generates a further round of precautionary savings. Whether these compounding forces turn outright negative, or they fall to a diminished but still positive level, will depend upon the state of external demand. If foreign sales can be increased at a time of challenged domestic demand, then gross savings can remain high. A nation's *Strategy Grid* will move towards or into the

second quadrant under such circumstances, which is, of course, a major warning sign.

The first and third factors relating to the move to trade surplus—the move up the value chain and the social recognition of Japanese goods—point towards a continuation of the outward-oriented strategy. However, the optimistic argument must be balanced by the fact of the decline in the investment share of income from 1973. This under-utilisation of the national savings supply was underpinning the surplus at the aggregate level and is potentially indicative of a move towards export dependence.

In the 1970s, a degree of ambiguity began to attach itself to Japan's strategic path. On the positive side, formidable strength was apparent in the rise of a critical mass of Japanese multinational firms. These strategic organisations, many of whom were beneficiaries of preferential treatment in the early stages of the post-war strategic pursuit, achieved global relevance in a number of major industries. These included steel-making, shipbuilding, automobiles, office machines, consumer electronics, microelectronics, general machinery, non-ferrous metals processing, chemicals, precision instruments, financial services, trade facilitation, construction, infrastructure, and energy—just about everything outside of defence and aerospace. They had physically outgrown state sponsorship and chafed at the continuation of bureaucratic oversight. With a global demand base, an increasingly international production base, and the ability to tap offshore capital markets for funds, an alliance with the state became increasingly irrelevant to these firms.[19]

The non-traded sector was a different story. It was argued above that the inter-sectoral terms-of-trade between firms and households were strongly in favour of firms through the 1950s, 1960s, and 1970s. The strategic leadership chose to subsidise outward-oriented industrialisation by suppressing returns to domestic household savers. This episode of a developmental state "getting the prices wrong"[20] was pro-strategic. In the 1970s, another inter-sectoral subsidy was implicitly sanctioned. The subsidy ran from the competitive, high productivity portion of the economy to the uncompetitive, low productivity segment. Further, the subsidies were both inter-sectoral (e.g. electronics vis-à-vis agriculture) and *intra*-sectoral (e.g. large shipbuilders vis-à-vis single dock operators).[21] These subsidies were clearly contra-strategic, being inherently a matter of distribution rather than aiming at genuine income generation by enhancing intra-industry competition.

The uncompetitive, low productivity elements of the economy included labour-intensive industries in the traded sector that were past their competitive peak (e.g. textiles) but refused to go quietly; industries coddled by high levels of effective

[19] These arguments are also relevant to the relationship between non-financial firms and their "main banks". See Aoki and Patrick (1994) and Sheard (1996) for a discussion of the main bank system. See McKay (1999) for an analysis of its relationship to broader national strategy over the course of the post-war period.

[20] This phrase is associated with the work of Alice Amsden (1988, 2001). It was originally coined to describe the South Korean approach to outward-oriented industrialisation.

[21] For a discussion of the mechanics of structural adjustment in the shipbuilding industry during the 1970s, see McKay (1999, chapter 5).

protection (e.g. agriculture); and industries with a degree of natural protection where domestic competition was at best soft and at worst corrupt (e.g. construction). Added to this, some industries that were internationally competitive had suddenly been saddled with excess capacity due to a decline in external demand for their output (e.g. shipbuilding), with the post-oil shock world presenting a dramatically altered environment for heavy manufacturing.

For the competitive portion of the economy, these implicit transfers meant higher direct and indirect input costs, a larger tax burden, and greater competition for capital, labour, and other factor inputs than would otherwise have been the case. The response of the competitive sector was to move production facilities offshore. At home they were being asked to shoulder the burden of the weak. The contrast with the lure of cheap labour costs, tax concessions, and other forms of preferential treatment available to the foreign direct investor in ambitious emerging economies engaging with the GST was stark. With a number of Japan's regional neighbours embracing outward-oriented industrialisation in this fashion, new productive capacity that might have been added in Japan moved abroad instead, and the proportion of the domestic economy accounted for by lower productivity elements rose.

The expanding presence of these lower productivity elements in the economy was a drag on overall competitiveness. At the same time, the large companies did even better in overseas markets as they lowered their costs through the hollowing out process, setting up integrated production chains around the Asia Pacific rim (Tipton 2007, pp. 57–61), in many cases taking the specialised small firms in their supply chains with them. They also rapidly increased their brand recognition with Western consumers. "Made in Japan" had morphed from cheap, to reliable, to superior, and finally, to "cool" (Future Brand 2014; Prestowitz 1988; Vogel 1979, 1985).

The conventional history of the creeping development of the "dual economy", particularly in the context of industrial adjustment, is substantial (Calder 1988; Katz 1998; Samuels 1983; Uriu 1996). As noted above, the negative impact of the two-track economy upon productivity, in tandem with the less supportive international backdrop of the 1970s and the early 1980s, saw Japan's rate of catch-up to US income levels slow to an average of just 0.6 percentage points per annum in the 10 years to 1985.

It is instructive to again turn to the *Strategy Grid*. Figures 4.11 and 4.12 summarise Japan's strategic path from 1973 to 1991. The first obvious point to make is that the scatter moved vertically for most the period between the first and second oil crises, indicative of shifting global IVA and export shares that did not transmit into sustained progress or regress in terms of relative living standards. Note that some of the year-to-year movements in Japan's export share reflect swings in relative prices, with the inflated value of oil exports crowding out manufacturing exports during the two oil crises, as well as suppressing global household demand for durables. The floating of exchange rates after the Bretton Woods era introduced an additional source of volatility through this period that had an influence on the distribution of trade in value terms.

Specifically on Japan's exchange rate, McKay (2014b, p. 203) stated that "The yen appreciated against the US dollar (and in broad effective terms) in fits and starts

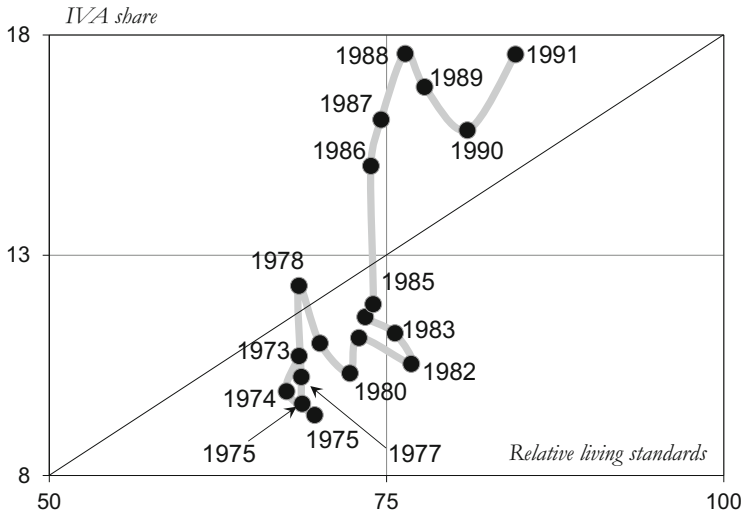

Fig. 4.11 Japan's IVA share and relative living standards: 1973–1991. Source: As for Fig. 4.1

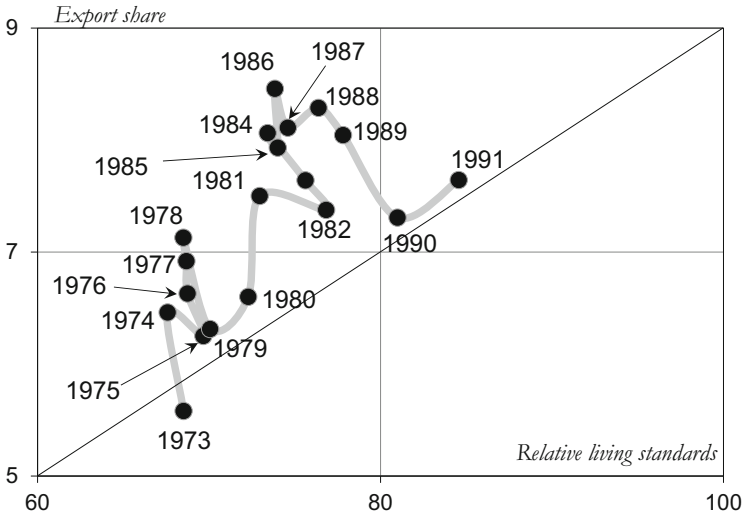

Fig. 4.12 Japan's export share and relative living standards: 1973–1991. Source: As for Fig. 4.2

in the 1970s. From the Bretton Woods fixed rate of ¥360 to the dollar that held through the 1950s and 1960s, it appreciated to ¥308 after the Smithsonian Agreement of December 1971; it was trading at ¥270 at the end of February 1973 after it was officially floated on the 14th of that month; it appreciated to ¥176 by October 1978. From that point the contractionary monetary policies of the Volcker-led US Federal Reserve sponsored US dollar strength deep in to the 1980s. The yen

averaged ¥236 in the 5 and a half years of the 1980s leading up to the Plaza Accord of September 1985."

The strategic inferences associated with a vertical kink in a nation's strategic pathway have already been discussed at length in both the abstract and in real-world situations. Earlier in this chapter, in discussing a vertical kink in Japan's path between 1900 and 1913 (Figs. 4.4 and 4.5), it was argued that "it is what happens at the next strategic kink—which quadrant the economy passes through in the succeeding phase—that matters in the long run, not the temporary stability in the economy's rate of catch-up to the frontier."

In that earlier instance, Japan tilted backed from the vertical into the first quadrant between 1913 and 1926, but only just. In the current circumstance, the vertical schedules traced between 1979 and 1985 in both Figs. 4.11 (IVA) and 4.12 (exports) depict a first-quadrant strategy in this phase if the two end points are connected. However, tracing the annual observations reveals a volatile period where progress was far from unidirectional. It is clear that cyclical factors began to impinge more regularly on secular dynamic forces at this stage, consistent with the proximity of Π. The impact of US economic recession (strong catch-up for Japan through 1982) and the Reagan fiscal expansion and strong dollar policy (better Japanese exports from 1982 through to the Plaza Accord but more impressive US income per capita growth) can be easily seen in the data.

In the second half of the 1980s Japan's rate of income per capita catch-up improved marginally to 0.9 percentage points per annum, from an average of just 0.6 percentage points per annum in the 10 years to 1985. While no period after 1973 came close to replicating the figures of the 1960s, to the lay observer it must seem curious that Japan was able to accelerate its rate of catch-up after 1985 despite the substantial headwinds of the hollowing out of manufacturing and the impact of the post-Plaza Accord yen appreciation, in addition to the basic challenge of growing more swiftly despite the achievement of frontier economy status. Taken together with the domestically oriented kink in Fig. 4.12 (a fourth-quadrant outcome), this could be interpreted as a prima facie signal that a new sub-strategy had emerged that gave Japanese industrialisation a second wind.

Hindsight argues decisively that this was not the case. Strategic decision-makers attempting to steer firms and economies operating at the frontier, of course, do not have the luxury of hindsight. As emphasised in Chap. 2, real-time assessments on sub-strategic veracity and viability are extraordinarily difficult. The Japanese were observing that their rate of catch-up to the USA, which had slowed considerably in the decade to 1985, was again moving ahead impressively, as illustrated by the considerable progress on the horizontal axis in Figs. 4.11 and 4.12. Also, the *Strategy Grid* in Fig. 4.12 indicates that the sub-strategy was now dependent on domestic demand: a home-grown boom. Confidence was undeniably high.

The G5 Plaza Accord of 1985 ushered in a protracted era of a weaker US dollar, and its corollary, a stronger Japanese yen. This completed the long process of yen

appreciation from its fixed rate of ¥360 to the dollar under Bretton Woods to a level more in line with its theoretical equilibrium level.[22]

Repeating the data presented in McKay (2014a, p. 203) "All told, by the end of 1987 USD/JPY had moved 66% in the yen's favour since the collapse of Bretton Woods." This substantial shift in the exchange rate had a major impact on Japanese export market share. Japan's share of global exports fell from 9.6% in 1985 to 8.8% in 1986, 8.2% in 1987, and 8.0% in 1988, after which it stabilised just over 8%. One interpretation of this deterioration in export market share could be that it was a symptom of the unwinding of a pro-strategic policy framework that relied partly on an undervalued exchange rate. This framework may have supported an unsustainable level of market share. This potential mode of strategic exhaustion is discussed in Chap. 3. However, as there was as yet no sign of exhaustion in Japan's relative income growth, i.e. this was not a third-quadrant outcome, then this partial inference falls down. The fact that Japan made further progress towards improving its relative income status despite the decline in export share was a strong contemporaneous signal that a domestic-led sub-strategy was a viable kink after the Plaza Accord.

It is appropriate to also consider the impact of different weighting systems on relative GDP measurement. Up to this point, all comparative GDP data presented in this study have been in 1990 international dollars, which are converted from the local currency data via exchange rates estimated by the Geary–Khamis method (Geary 1957; Khamis 1967, 1970, 1972). This is Maddison's preferred numeraire for his purchasing power parity (hereafter PPP) estimates (Maddison 2003, pp. 227–230). One major advantage of PPP estimates from the point of view of practical, multi-country analysis is that they are far more stable than market exchange rates and therefore the weights derived from them are more stable over time. When considering the best method of aggregating and comparing national output, a stable common unit should be preferred to a volatile one. Furthermore, the PPP method is a more accurate measure of domestic purchasing power than one based on market exchange rates, given the tendency of market exchange rates to undervalue non-traded sector activity (Dowrick and Akmal 2005; Maddison 2003; World Bank 1993). PPPs are thus clearly superior to market exchange rates in estimating living standards in lower income economies.

All of that said, market exchange rates do contain highly relevant information in terms of strategic feedback. As Dowrick and Akmal (2005, p. 201) argue, "For some purposes, such as assessing a nation's capacity to repay foreign debt or its bargaining

[22]The utility of exchange rate theory is limited by its inability to meet undemanding performance hurdles in a short- or medium-term forecasting environment, even with assumed foreknowledge of fundamental explanatory variables (Meese and Rogoff 1983). However, purchasing power parities, based on the law of one price, do have some predictive power over long horizons, and may be usefully employed over the course of decades, if not years (Froot and Rogoff 2005, pp. 1658–1662). The statement that the yen exchange rate had converged on its equilibrium level is based on the observation that the market exchange rate measure of Japan's GDP was roughly equivalent to the PPP measure, on average, from 1977 to 1985.

power in international trade negotiations, the FX income comparison may well be appropriate. For the purpose of measuring inequality in living standards, however, we need to take account of the real purchasing power of national currencies which typically differs from the purchasing power implied by the exchange rate." To those first points might be added that purchasing power abroad, in particular the ability to acquire ownership of desirable foreign assets and to consume high-end services and luxury goods, is a relevant consideration when thinking of market exchange rates. There is also the simple fact that the basic connotation of "strong currency, successful economy" holds water in the general community, which has implications for the state of confidence.[23] From there, it is only a short distance to the perception that a strong currency is a stamp of approval for the sub-strategy of the economy in question, which should build strategic confidence within that jurisdiction. It is one thing to self-assess that one is doing well. It is another thing entirely to have the unemotional judgement of the international financial markets concur.

From the point of view of Japan in the second half of the 1980s, the gulf between a PPP estimate of living standards and the market exchange rate measure is so wide that it would be remiss to leave it unremarked upon. On a market exchange rate basis, Japan's GDP per capita increased from 63% of the US level in 1984 to 116% of the US level in 1991 and 148% of the US level in 1995 (Fig. 4.13). That was a spectacular signal that the new fourth-quadrant (domestic demand-dependent) strategy was a robust one. Additionally, a second spectacular signal was observed: a rapid rise in domestic asset price inflation. The compounding wealth effects of asset price gains were a major contributor to the acceleration in income growth that enabled an enhanced rate of catch-up in the late 1980s. Strategic confidence boomed, catalysing the positive pro-cyclical dynamics of the *Strategic Alternator*. The investment share of GDP began to rise again, breaking out of its long decline from the 1973 peak (Fig. 4.11), with Japanese businesses adding debt freely as the rapid gains in stock prices and existing physical asset values pumped up their balance sheets. The performance of two major asset classes, commercial land and the equity of the nation's largest companies, is illustrated in Fig. 4.14. These data describe one of history's great debt-infused bubbles (Chancellor 1999; Kindleberger and Aliber 2005; Okina et al. 2001; Reinhart and Rogoff 2009). Strategic confidence, of course, is never greater than when a bubble is approaching its peak altitude. With hindsight, it is obvious that the scale of the asset price signal was widely separated from fundamentals, with speculative fervour taking hold (Chancellor 1999), which unleashed the *Strategic Alternator's* pro-cyclical dynamics to utmost effect. In real

[23] This assertion is based upon the observed correlation between the performance of the Australian dollar and the monthly directional change in the Westpac-Melbourne Consumer Sentiment Index, which the author has observed in his capacity as a professional forecaster for the last one and half decades. This observation obviously abstracts from situations where the confidence level of trade exposed sectors is adversely impacted by an exchange rate that deviates considerably from its fundamental value, perhaps in response to a mineral discovery, or "booming sector". See Corden (1984) and Gregory (1976).

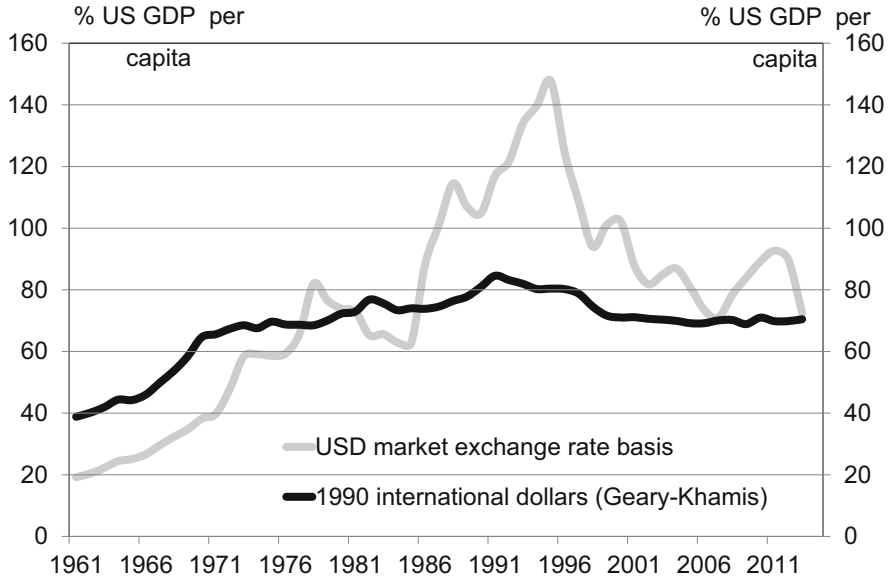

Fig. 4.13 Japan's relative living standard: PPP and market basis. Source: 1990 international dollars as for Fig. 4.1. Market exchange rates from the World Bank's World Development Indicators

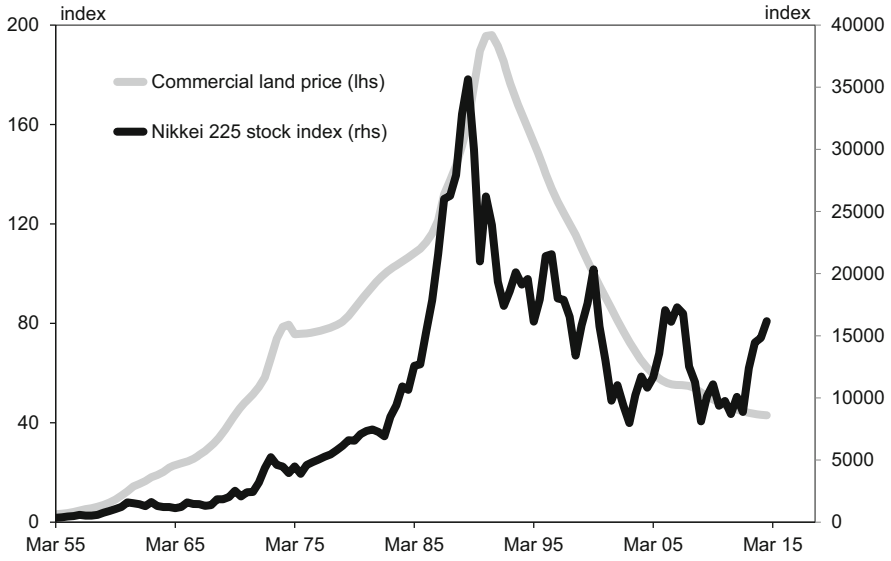

Fig. 4.14 Japanese land and equity prices since 1955. Source: Underlying data from CEIC. The Nikkei 225 stock index (right-hand axis) is based on 16 May 1949 = 176.1. The commercial land price index (left-hand axis) is based on March 2000 = 100

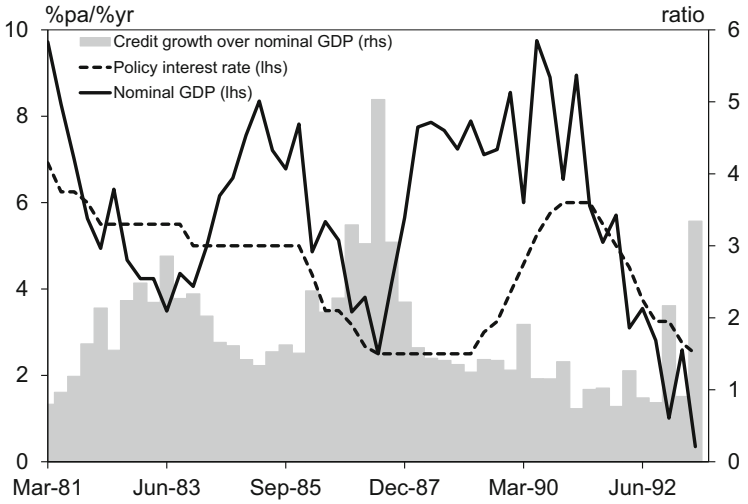

Fig. 4.15 Japan's strategic leadership errs. Source: Underlying data from the OECD's Main Economic Indicators database with calculations by the author

time, the actions of Japanese policymakers imply that they were also, to a degree, swept up in the moment (Noguchi 1994).

Figure 4.15 plots the policy interest rate, the growth rate of nominal GDP, and the ratio of the growth rates of domestic credit and nominal GDP.[24] A strategic administration should use monetary policy to limit fluctuations in non-strategic or nominal inflation so that the underlying strategic inflation signal is transparent. In Japan in the second half of the 1980s, an excessively easy liquidity environment multiplied the rate of asset price inflation, sending a signal that was interpreted in a predictable but ultimately extremely damaging fashion. In other words, the strategic confidence of Japanese agents was cumulating powerfully on the basis of *faux* strategic inflation that was in reality partly the result of a major and protracted monetary policy error.

The actions of the Japanese administration indicate that a firm belief that the fourth-quadrant strategy embarked upon in the wake of the Plaza Accord was a robust one. The strength of this belief prevented the early recognition that dangerous financial imbalances were building up, an unintended amplification of them, and an inability to achieve real-time recognition of impending exhaustion. They may have felt that the decline in export share after 1985 was a temporary exchange rate-driven phenomenon that should be offset by easy domestic monetary conditions. They would have seen the narrowing of the income gap as a robust justification of their policy stance. Certainly, they were not under any great pressure to do otherwise. The

[24] The rapid increase in equity and bond market fundraising in the 1980s (McKay 1999, Figure 5.2, p. 85), amplified by the febrile growth in financial engineering known as *zaiteku* (McKay 1999, Appendix 2, pp. 165–170), means that a focus on this narrow measure of credit understates the true breadth of the rise in liabilities, and thus leverage. The narrow figures are striking nonetheless.

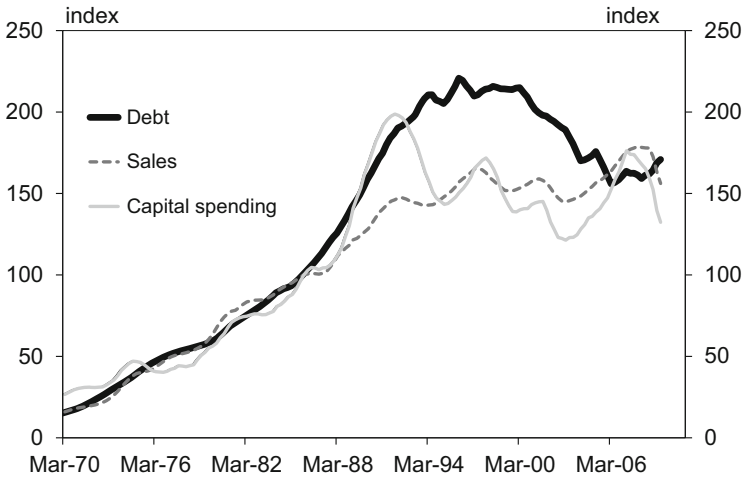

Fig. 4.16 Japan's debt overhang. Source: Underlying data from the Japanese Ministry of Finance's Financial Statements Statistics of Corporations by Industry database, available online at http://www.mof.go.jp/english/pri/reference/ssc/index.htm. The quarterly series are indexed such that the average level for 2005 = 100

hubris and general air of triumphalism that arose in the public commentary of the time is a testament to that—including a growing cohort of Western cheerleaders (Okina et al. 2001, pp. 417–418; Vogel 1979).

There was an extended discussion of fourth-quadrant strategies in the previous chapter. It was illustrated that under certain conditions, domestic demand-dependent fourth-quadrant strategies can be durably successful. The development of the mass internal market in the post-bellum USA was one example put forward in this regard. Japan's fourth-quadrant kink in the 1980s is a major counter example.

The degree of financial leverage that goes along with a major cumulative rise in strategic confidence makes a fundamentally flawed asset price signal particularly damaging. The eventual realisation of the extent of the debt and asset price overhang (Figs. 4.14 and 4.16) left corporate Japan (and their financiers) with a balance sheet problem of immense magnitude, and a confidence problem that arguably persists right up to the time of writing. During the bubble, the corporate sector accumulated immense liabilities set against their rapidly increasing net worth. The banks providing the funds felt that the collateral was ample, and were completely enmeshed in the pro-cyclical dynamics themselves by their large cross-shareholdings in *keiretsu*-affiliated firms. Securities firms, wealthy individuals, and corporate treasuries profited enormously from rising equity prices. Households felt vastly secure in their jobs and were comfortable taking out home mortgages at valuations that implied extreme ratios to average income levels. The result was that the debt-funded investment activities of firms become completely decoupled from actual

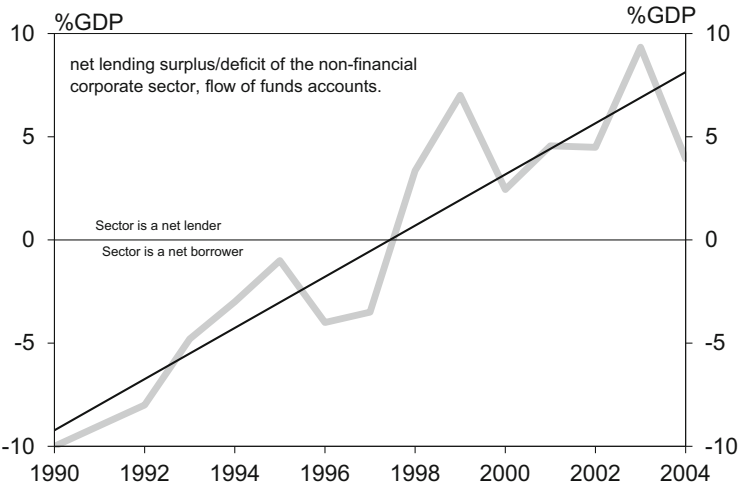

Fig. 4.17 The crash of strategic confidence after 1990 through the lens of corporate saving. Source: Underlying data from the Bank of Japan's Flow of Funds Accounts accessed via CEIC with calculations by the author. Adapted from Exhibits 1–6A and 1–6b in Koo (2008)

sales (Fig. 4.16). Strategic confidence in a false paradigm built a castle on the proverbial swamp.[25]

As emphasised frequently throughout this study, strategic confidence is a momentum variable. When the price signal turns, strategic confidence can unwind swiftly. The transmission mechanisms of a system-wide decline in strategic confidence, where the majority of agents have over-extended themselves following a *faux* paradigm, are extremely difficult to arrest with conventional policy tools. In Japan's case, monetary policy became impotent as demand for new credit evaporated. Corporate Japan entered upon more than a decade of deleveraging, shifting from a net "flow" borrower of around 10% of GDP in 1990 to a substantial net lender (Fig. 4.17; Koo 2003, 2008). Unsurprisingly given this backdrop, the investment share re-entered the downtrend first sighted in the middle 1970s.

With the nominal inflation signal of the bubble years stripped away, a sustained strategic deflation of asset prices commenced, and economy-wide prices also fell, as proxied by the GDP deflator. The parlous state of the strategic outcomes achieved through the 1990s represents unambiguous testimony that the sub-strategy of prior decades had exhausted itself. The *Strategy Grids* tell the depressing story (Figs. 4.18 and 4.19). Japan's performance on all axes regressed through the 1990s. With no alternative sub-strategy in place, and a lack of institutional flexibility that would

[25] This metaphor is used advisedly and with apologies to the profound message of Shusaku Endo's *Silence* (1980), which is set in the Japan of the 1600s, when persecution of Christian missionaries was at its height. It is not a light-hearted reference to the famous comedic interchange in Monty Python's *Holy Grail*.

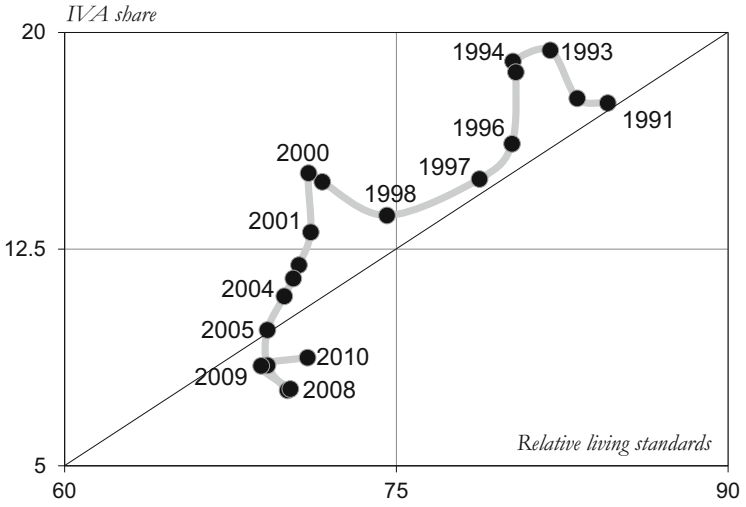

Fig. 4.18 Japan's IVA share and relative living standards 1991–2010. Source: As for Fig. 4.1

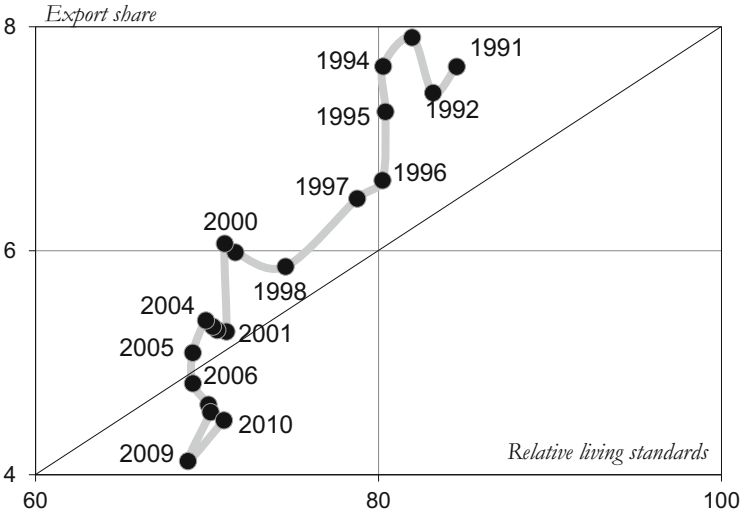

Fig. 4.19 Japan's export share and relative living standards 1991–2010. Source: As for Fig. 4.2

have enabled a quicker workout of the balance sheet problems bestowed by the 1980s, such as mark-to-market accounting, Japan moved assertively backwards.

Just when the basic post-war sub-strategy exhausted itself is not precisely clear. It was certainly no earlier than 1973 and probably much later. It was definitely not later than 1990 and probably earlier. The Plaza Accord of 1985 is obviously a key milestone within this wide range. It removed one pillar of Japan's external strength: the level of the exchange rate. This development encouraged the Bank of Japan to

run an even easier monetary policy than they might have otherwise to counter expectations of further US dollar depreciation in the foreign exchange market (Noguchi 1994; Okina et al. 2001, p. 421). This exacerbated the problem of the false strategic signal emanating from domestic asset prices. This also delegated some of the burden of real yen appreciation to the relative price level rather than to the nominal exchange rate.

The policy response displayed a clear misunderstanding of the fundamental concept of strategic confidence. The correct role for a strategic administration is to nurture confidence in viable sub-strategies through a supportive regime. This involves both counter-cyclical and pro-structural policy. However, when the leading indicators of strategic exhaustion become evident, counter-cyclical monetary policies may hurt the strategic outcome in the long run. If monetary easing maintains confidence in a soon-to-exhaust strategy, then the administration is committing a major policy error. If a *faux* signal of strategic dynamism is communicated, then the incentive for pioneers to adopt alternative strategies is dampened just when the need for innovation and experimentation is greatest. The failure of the Japanese administration to provide strategic leadership at this moment of intense national need is extremely conspicuous. Rather than allowing a strategic *dis*inflation to unfold unfettered, the underlying price signal was distorted until it was too late to adapt and *de*flation became inevitable. The initial error was compounded by a sharp monetary tightening in 1989 and 1990 (Okina et al. 2001, pp. 425–426), which achieved the proximate pricking of the bubble, unleashing underlying deflationary forces over the entirety of the next decade.

The wealth-destroying decline in the Japanese asset price level observed over the last two decades is unambiguous evidence that the sub-strategy that had served it well previously had nothing left to give. The failure of the strategic administration to provide the right sort of leadership through the 1980s was immensely damaging—to the confidence of strategists and the welfare of succeeding generations.

4.4 Beyond the Bubble

Japan's 1990s experience is a clear example of the recursive negative feedback loops embodied in the dynamics of the *Strategic Alternator*. These dynamics operated in slow motion in the first half of the decade, as both borrowers and lenders sat on their hands and hoped that asset prices would bottom out. Lenders refinanced maturing loans throughout this period, preventing the obvious fire sale that would have resulted if foreclosures were pursued, assets revalued strictly based on market conditions, or collateral was seized. This was clearly a forlorn hope given the scale of the overhangs of debt, physical capital stock, and asset prices. The weakness in domestic demand that coincided with this phase led to a large increase in the current account surplus, and a return to considerable strength in the yen, despite large FDI outflows, which persisted through to the middle of the decade. The manufacturing sector sharply accelerated its investment in overseas production capacity at this

time, and Japanese banks followed, and dramatically increased their claims on foreign borrowers, particularly in emerging Asia (McKay 2014a, b). This was a new sub-strategy of sorts, although it is one that is poorly reflected in traditional economic statistics, which capture the geography of production but not necessarily the ultimate beneficial owner of the income generated thereby.

In the second half of the decade, the slow-motion crisis sped up, culminating in the banking crisis of 1997–1998, which coincided with the onset of the Asian crisis, by which point a material portion of both the international and domestic assets of Japanese banks were of dubious quality. Recent research has shown that the swift recognition and unwinding of debt overhangs following downturns are associated with substantial medium-term output gains vis-à-vis slower workout processes (Chen et al. 2015). Strategically, this makes sense. Capital stock accumulated with a view to operating under a sub-strategic umbrella that has since exhausted is purely redundant, and acknowledging that the liabilities associated with it will not be serviced in the way both lender and borrower thought they would be is a positive step. It destroys perceived wealth, yes, but holding on in the hope of a revival, in the face of incontrovertible evidence to the contrary, is more damaging, ultimately, for aggregate living standards.

The scatter plots for the post-bubble period close the loops on the lasso formations noted early in this chapter. It was argued that a circular scatter plot—the lasso—implies that Japan's sub-strategies took it through all four quadrants of the *Strategy Grid* during the period in question. Fascinatingly, Japan traced this rough circle counter-clockwise when the vertical axis describes world IVA share in Fig. 4.1 and clockwise when the vertical axis describes world export share in Fig. 4.2. These results are clearly dripping with strategic import. The two *Grids* are merged as Fig. 4.20, with the number of observations reduced for reasons of parsimony.

The loops formed by the scatter plots in Japan's pre- and post-bubble phases tell a story of an economy that had reached and exceeded Π by 1985, but continued to set policy as if the objective was for the economy to materially outgrow the rest of the strategic core. Japan's fourth-quadrant kink from 1985 to 1990 (the dark grey export schedule in Fig. 4.20) was associated with a rapid increase in the Japanese proportion of global IVA. The 1990–1995 kink pushed Japan firmly into the third quadrant with regard to the export schedule—the exhaustion zone—and yet the IVA share continued to climb, a legacy of the excess productive capacity (Figs. 4.10 and 4.16) put in place during the euphoria of the bubble era. Immense excess productive capacity underpinned goods price deflation, just as pervasive deleveraging underpinned asset price deflation. These factors were combined with a lack of ability to increase export share. There was no viable external outlet for the productive potential that was no longer capable of being absorbed domestically.

In the post-bubble age of pervasive debt and capital stock excess, with the derivative deflationary forces, the economy has frequently fallen into recession whenever it has faced an adverse shock, due to the fragility of strategic confidence, the impotence of the monetary policy lever, the extravagantly extended public debt stock, and the ever-present, pro-cyclical logic of the *Strategic Alternator*. Between the local peak in real GDP in the June quarter of 1992 and the December quarter of

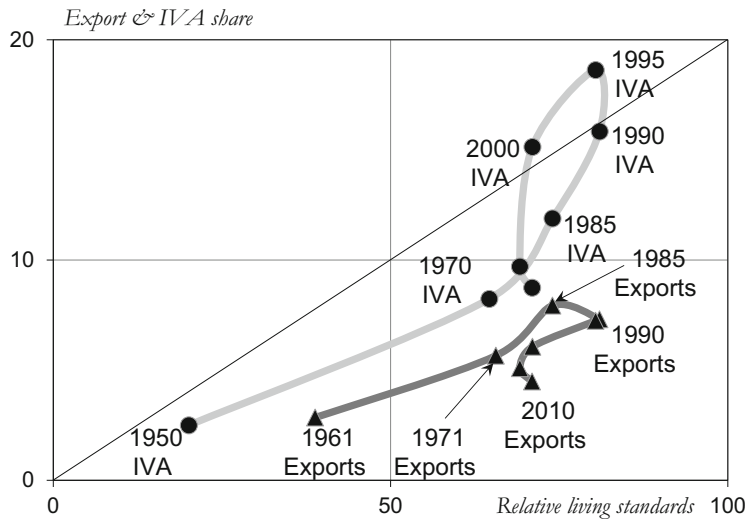

Fig. 4.20 Japan's strategic industrialisation pathway since 1950. Source: As for Figs. 4.1 and 4.2. Note: The export schedule is dark grey with triangles marking individual observations, while the IVA schedule is light grey with circles marking individual observations

2014, the Japanese economy contracted in 36 of 91 quarters, with nine instances of recession (defined as two or more consecutive negative quarters).[26] These recessions have been produced by a multiplicity of triggers: the withdrawal of fiscal stimulus, a banking crisis, a hike in the consumption tax, emerging market crisis, advanced country recession led by the corporate sector, and advanced country recession led by the household and financial sectors. From a strategic point of view, the fundamental point is that the aggregate signals reaching Japanese firms since 1990 or so have clearly had adverse implications for their confidence, and thus for economic growth. The pro-cyclical dynamics of the *Strategic Alternator* have been compounding adversely ever since.

4.5 Conclusions

This chapter has investigated Japan's long-run experience pursuing a remarkably successful strategy of technological change eminently suited to the industrial era of global economic history. The discussion has at all times been framed by the high theory of the DST and the *Strategic Alternator* and the practical extensions of this framework detailed in Chap. 3.

[26]The number of genuine economic recessions drops to eight if the earthquake/tsunami/Fukushima episode is excluded as a non-economic event.

For the majority of the period under review, Japanese history provided a vivid example of the potentially positive feedback loops embodied in the dynamics of the *Strategic Alternator*, with fundamentally robust past success feeding well-founded confidence in future success. It was illustrated that Japan's top-line strategic mix in the first phase of its industrialisation, from the initial opening-up in the 1850s through to World War II, was a primary strategy of technological change with a major subsidiary strategy of conquest. The narrative of success that characterised most of this era was decisively concluded by the enormous setback of defeat in World War II, and the indignity of Allied occupation.

In the post-war period, a new and highly remunerative approach to industrialisation—re-entering into the GST, this time under the technological and security sponsorship of the USA—was adopted. The Japanese economy proceeded to thrive under these conditions, producing the highest rate of sustained economic growth ever seen up to that time. Just as Japan was the first non-European nation to defeat a European power in war in the early 1900s, in the final quarter of the twentieth century it also became the first non-European, non-settler economy to ascend to the global living standard frontier under the industrial paradigm, a status associated with membership of the "strategic core" of the world system.

In the scatter plots presented throughout the chapter, with the exception of the Pacific War and its immediate aftermath, Japan's industrialisation path prior to the 1970s was consistently passing through the first quadrant, which is at once indicative of success, balance, and durability. However, a degree of ambiguity on this front began to arise through the 1970s, as the secular tailwinds of catch-up growth began to lessen, and the global environment faced by outward-oriented economies shifted from stable and benign to volatile and periodically malignant. Additionally, cyclical factors began to impinge more visibly on Japan's pursuit, as did the state of policy settings abroad, with a new phase of financial globalisation commencing with the demise of the Bretton Woods architecture. These newfound difficulties produced periods where the scatter plots moved vertically, a development that should always put policymakers on alert.

Japan's rate of relative living standards catch-up decelerated markedly in the 10 years to 1985, which was the year that the Plaza Accord ushered in a period of consistent and substantial strength in Japan's exchange rate. The year thus stands as a vitally important strategic kink. In the 5 years following 1985, Japan pursued a fourth-quadrant strategy indicative of a dependence on domestic demand, and remarkably, re-accelerated its rate of catch-up in living standards. While history offers some important examples where such a kink has been benign, in Japan it was associated with a spectacular bubble in debt-fuelled asset price inflation and over-investment, underpinned by a complacent strategic leadership that did not perceive the scale of the imbalances that were emerging until far too late. When the degree of over-extension came to be widely known, Japan became a vivid example of the potentially negative feedback loops embodied in the dynamics of the *Strategic Alternator*, with pervasive pessimism, debt minimisation tactics, and deflationary expectations feeding a recursive downward process. While Japan remains an important global entity, and it has retained its frontier status up to the time of writing, it has

also suffered through three deflationary "lost decades" characterised by rolling recession in the post-bubble era.

Japan's striking successes from the second half of the nineteenth century through 1990 or so, and its subsequent deflationary struggles, make it a tremendous test case for the application of the DST. Furthermore, its unique status as Asia's first industrial giant made a detailed examination of its long-run industrialisation strategy a vital stepping stone on the path towards a robust discussion of the future of Asia's second industrial giant, China. Ergo, this chapter is a critical link in the study. The remainder of the work will consider China's experience directly.

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Part II
China

Chapter 5
China's Millennial Pathway in a Strategic Mirror

5.1 Introduction

Prior to conducting the requisite strategic examination of the economic history of the People's Republic of China, it is appropriate to set the scene by considering China's remarkably long history of unitary empire through the lens of the DST. China's experience has turned up two major conundrums that continue to engender controversy. The first is the extraordinary longevity of the empire, which is a stark contrast to the experience of Old-World conquest societies (Snooks 1996; Taagepera 1978). The second is the famous "Needham question" (Chen 1991; Elvin 1973; Lin 2012; Needham 1954; Pomeranz 2000; Grinin and Korotayev 2015), which asks why China failed to produce an industrial revolution during the Song dynasty, given its global technological leadership at the time and the obvious progress in a productive technique that characterised the period.

The chapter will proceed as follows: First, an alternative periodisation of China's imperial history will be presented, in order to recast the traditional dynastic taxonomy in the DST framework. Second, Snooks' own perspectives on China's long-run strategic choices will be discussed, with a view to providing explanations for both the longevity of the Chinese empire and the Needham question within the theoretical construct framing this book. Finally, the discussion will turn to the decline of the Qing dynasty—the last of the imperial age—and the strategic difficulties that the economy faced as the shocking reality of Chinese backwardness was revealed in the century of humiliation that preceded the rise of the People's Republic.

The traditional dynastic periodisation of Chinese history (or any history divided along such lines for that matter) is mute on strategic inclination. While the narrative of dynastic rise and decline is extremely well documented (see, for instance, Mann Jones and Kuhn 1978), the explanations presented by historians to explain these rhythms tend towards the idiosyncratic, with an emphasis on proximate, descriptive causation, and China's presumed sui generis status (Elvin 1973; Feuerwerker 1992; Mann Jones and Kuhn 1978; Wong 1997). When the discussion has been placed in a

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comparative context, the Chinese element of the debate tends to focus on impediments to European-style development, in a Weberian spirit (Weber 1930). This approach naturally suffers from the questionable basic assumption that the European experience was both normal and replicable given "correct" discretionary institutional design (Frank 1998; Jones 1981; Lin 2012; Pomeranz 2000; Weber 1930; Wong 1997).

Albert Feuerwerker's (1992, p. 757) Presidential Address to the Association of Asian Studies still sums up the state of the field, despite it being delivered three decades ago at the time of writing:

> The very large questions that I want to address—of course, I cannot 'answer' them—are these: (1) Was it the same game with identical rules that was played out in the early modern economic histories of China and Western Europe (or Japan, the Near East, etc.), or must we depend to an important degree on specifically Chinese cultural features to construct a satisfactory paradigm? In the realm of economic history, as in others, for many students there are substantial doubts about the efficacy of viewing China through the lens of what are taken as essentially 'Western' models. (2) What varieties of economic change or growth can in principle occur under the economic rules which were in effect? (3) Which types of change, in fact, occurred? Where? When? Of what dimensions? For how long? You will shortly know how little progress I have made in illuminating these matters.

Given that Feuerwerker has no superior in the field of Chinese imperial economic history, and the fact that his lament still rings true at the time of writing, the humility of his 1992 address is also an indictment of half a century of modern scholarly activity within China and without. Or as he elegantly phrased it, referring specifically to the efforts of scholars in the People's Republic, the "immoderate amounts of paper, ink, and human energy [that] have been devoted over the past four decades to the inquiry into why China's traditional economy did not enter onto the path of modern economic growth á la Britain, Western Europe, North America, and then Japan" (Feuerwerker 1992, p. 758).

In short, beyond the world-system school, which champions "horizontally integrative macro-history" (Frank 1998) and the "coevolution" of economics and politics in very long-run global-level analyses incorporating China (Modelski and Thompson 1996; Grinin and Korotayev 2015), there has been a remarkable absence of attempts to apply general theories to China's incredibly rich imperial history,[1] and/or to use inductive economic historiography to build such a theory on a Chinese foundation. This book attempts to directly address this gap.

[1] An exception to this observation is the World-systems school, who champion "horizontally integrative macro-history" (Frank 1998) and the "coevolution" of economics and politics in very long-run global level analyses incorporating China (Modelski and Thompson 1996). Whether World-systems is correctly classified as a Marxist offshoot, or a school in its own right, is not a debate in which the author wishes to indulge in this forum.

5.2 An Alternative Periodisation of Chinese History

Table 5.1 presents two taxonomies of Chinese history. The upper section details a DST, or Snooksian, view. The lower section presents a non-exhaustive traditional dynastic taxonomy. The middle column in the upper section details the primary dynamic strategy employed at the time, with the subsidiary strategies listed in the right-hand side column. The upper section is equivalent to the Chinese section of the broader global table in Chap. 2 (Table 2.1), with the periods up to around 1800 CE reproduced from that table, with some additional details, and subsequent phases added to bring the taxonomy up to the time of writing. The dates are chosen to reflect both approximate strategic kinks and consonance with the dynastic timeline.

In his writings on China, over and above the periodisation in Table 5.1, Snooks (1996, p. 315) introduced the following macro-phasing for the broad sweep of Chinese history, admittedly, at "the risk of considerable over-simplification".

1. The age of colonisation, from 1066 BCE to 221 BCE, the most recent portion of which is commonly known as the "Warring States" era.
2. The age of consolidation, from 221 BCE to 220 CE.
3. The age of conflict, from 220 CE to 581 CE.
4. The age of restoration, from 600 CE to circa 1800 CE.

Before embarking on an explanation of this phasing, it is essential to define the relevant theoretical parameters from a DST point of view. Firstly, for the entirety of the period under discussion, the pertinent aggregate technological paradigm, *T*, was Neolithic. As China domesticated crops as early as 6500 BCE (Ponting 2001, p. 62), more than five millennia before the Warring States period, while embarking on a genuine industrialisation strategy no earlier than the founding of the People's Republic,[2] that is a relatively straightforward judgement. Recall also the two laws that concern primary strategic choice under the pre-industrial paradigms:

The *Law of Human Dispersion* states that where natural resources remain under-utilised, in open societies they will be progressively brought into the material pursuit through migration and population increase.

The *Law of Eternal Recurrence* states that where natural resources remain under-utilised, in open societies operating under the Neolithic paradigm, they will produce a circular strategic pathway utilising either the conquest or the commerce strategies.

Therefore, the dynamic strategies open to China were just three: conquest, commerce, and population growth and dispersion (used interchangeably with family multiplication and migration, with the post-Palaeolithic adjunct of "colonisation" included under this umbrella). Recalling the discussion in Chap. 2, the first proviso in these laws ("where natural resources remain under-utilised") is critical because it indicates that for these laws to hold there must be a degree of technological slack

[2]The issue of strategic diagnosis during the time of self-strengthening (late Qing) and in the Republican era (1912–1949), when elements of a modern industrial economy emerged, will be discussed below and in the following chapter.

Table 5.1 Strategic and traditional taxonomies of Chinese history

DST taxonomy		
Epoch	Dominant strategies	Subsidiary strategies
1066 BCE–221 CE	Family multiplication/colonisation	Conquest
221 CE–1368 CE	Family multiplication/colonisation	Defence/defence & agricultural technology/central control
1368 CE–c1800 CE	Family multiplication/colonisation	Central control/agricultural technology
c1800 CE–1950 CE	*Dynastic and economic decline*	*Rebellion, population pressures, and foreign humiliation*
1950 CE–1978 CE[a]	Command planning, inward-oriented industrialisation	Autarky, technological change, central control
1978 CE onwards	Technological change, outward-oriented industrialisation	Commerce, population control

Traditional dynastic		
Epoch	Principal dynasties or phase	Principal or capital city
770 BCE–476 BCE	**Spring and autumn period**	Not applicable
475 BCE–221 BCE	**Warring states**	Not applicable
221 BCE–311 CE, of which	**Early empire**, of which	
221 BCE–207 BCE	Qin (Ch'in)	Ch'ang-an (present-day Xi'an)
206 BCE–8 CE	Western/Former Han	Ch'ang-an
25 CE–220 CE	Eastern/Later Han	Luoyang
221 CE–264 CE	Three Kingdoms	Cao Wei; Shu Han; Dong Wu
265 CE–311 CE	Western Jin	Luoyang
311 CE–580 CE	**Northern & southern dynasties**	
589 CE–906 CE, of which	**Middle Empire**, of which	
589 CE–617 CE	Sui	Ch'ang-an
618 CE–906 CE	T'ang	Ch'ang-an and Luoyang
907 CE–959	**Five dynasties & Ten Kingdoms**	
906 CE–1911 CE	**Later Empire**, of which	
960 CE–1126 CE	(Northern) Song	K'ai-feng
1127 CE–1275 CE	Chin/Mongol North; Southern Song	Peking; Li'nan (present-day Hangzhou)
1276 CE–1367 CE	Mongol (Yuan)	Dadu (Peking); Karakorum
1368 CE–1644 CE	Ming	Nanjing/Peking
1645 CE–1911 CE, of which	Qing/Manchu	Peking
Memo items—20th century China		
1912–1949, of which	**Republican era**	
1912–1937	Nationalist era	Peking; Wuhan and Nanjing
1937–1949	Second Sino-Japanese War and Civil War	Chongqing (Nationalist)
1949 onwards, of which	**People's Republic, of which**	

(continued)

Table 5.1 (continued)

Traditional dynastic		
Epoch	Principal dynasties or phase	Principal or capital city
1949–1977	Maoist era	Peking
1978 onwards	Reform era	Beijing
Of which		
1978–1997	Deng era	Beijing
1997–2012	Collective leadership	Beijing
2013 onwards	Xi era	Beijing

Sources: Table 2.1, Snooks (1996, Table 12.1, pp. 396, 314–315), Elvin (1973, p. 13), Maddison (1998, Table 1.1, p. 20), Graeber (2012), Zhang et al. (2015)
[a]Anti-strategic leadership phase

pertaining to the societal level. This latter condition dulls the incentive for technological innovation, which is high cost and low return if natural resources are not scarce (i.e. their relative prices are not high).

Conditions such as these exclude technological change as an efficient *lead* dynamic strategy. Technological change often serves as an important subsidiary strategy, however (Table 2.1), with efforts in this regard geared towards optimising the return from the lead strategy. The forthcoming discussion of the Chinese experience will highlight this point.

Another critical parameter for this discussion is the degree of competitive intensity pertaining in China both relative to other societies and in an absolute sense. Here it is necessary to invoke a primary law, the *Law of Competitive Intensity*, which states that human action—involving the selection and pursuit of dynamic strategies—varies according to the intensity of competition for scarce resources at any given level of technology.

Over the course of China's long imperial history, the degree of competitive intensity it faced, both from external forces and from within, varied considerably from era to era. As a general observation though, Chinese strategists tended to face a less intense competitive environment than their major contemporary societies. Across the rest of Eurasia, particularly in Western Europe (encompassing the Mediterranean, Rhenish, Baltic, and Atlantic societies) and the Near East, competitive intensity was extraordinarily high, and thus societies situated in these regions were tremendously strategically active. Meso-America was also a competitive hotbed, as were, at times, the Middle East, the Indus and Ganges valleys, and Mediterranean Africa. The Chinese context was different. Relatively physically isolated at the eastern extremity of Eurasia, and thus well away from the globe's multiple vortices of competitive pressure, and with relatively high rates of natural protection due to sea, desert, and mountain ranges, the Chinese empire was, by comparison with Western Eurasia, Meso-America or the Fertile Crescent, an oasis of relative calm. This isolation provided a buffer against external competitive pressure and was thus a critical force in conditioning the strategic mix employed across Chinese history.

To summarise the above, China had three viable potential strategies that it could have productively pursued in the imperial age given that the Neolithic paradigm predominated throughout; and while the competitive pressures China was subjected to fluctuated considerably over time, they were, in the main, less intense than those experienced in other major contemporary societies. With these critical DST parameters in mind, it is now appropriate to consider Snooks' macro-phases in more detail.

The age of colonisation (1066 BCE–221 BCE) was dominated by regional warlords, coming out of the north-west and the Yellow River Valley intent upon bringing the resources of what is now southern China under their control. Conquest and colonisation were the major strategic tools in this regard: fighting for control of new land if required, while settling it under circumstances of terra nullius. Competitive pressures during this phase were predominantly internal (between the warlords) rather than sourced from without (Snooks 1996, p. 315).

China was surrounded by less sophisticated peoples at this time: "nomadic tribes of Mongolia to the north, the "wild mountain peoples" (ancestors of the Tibetans) in the west, and the primitive forest tribes of the south" (Snooks 1996). This not only meant that the external pressures on China were moderate. These circumstances also allowed new resources to be acquired at relatively low cost simply through colonising land. These conditions meant that there was no rational incentive to pursue a systematic and costly conquest strategy. This was, however, a period of intense internal competition that generated considerable prosperity for the leading political entities (Snooks 1996). There was also a major cultural outburst of philosophy, literature, science, and technological innovation. Note that Confucius lived from 551 BCE to 479 BCE.

The age of consolidation (221 BCE–220 CE) was dominated by a successful attempt to achieve a unitary empire through the exercise of central administrative control (Snooks 1996). This was the beginning of the empire proper. Expansion continued through the twin strategies of colonisation/family multiplication, periodically allied to outwardly focussed conquest, while internal competition, now within the rubric of central control, remained in evidence in the competition for imperially disbursed rents (Snooks 1996, p. 318; 1997, p. 471). Turkestan[3] was added to the empire in 51 BCE and between 73 and 102 CE Qin expeditionary forces apparently reached the Caspian and possibly even the Black Sea (Snooks 1996, p. 318). There was, however, no sustained external threat of any magnitude in this period. Further, as the returns from external expansion were deemed to be below the high costs of such expeditions—noting that a lack of wealthy urban societies within easy reach lowers the potential returns from conquest and the associated plunder—conquest was not pursued systematically and it never served as a leading strategy at times when the empire was unified.

Snooks argued that the age of conflict, from 221 to 581 CE, was the "early forcing ground for the innovation that finally emerged under the Song" (Snooks 1996).

[3]Turkestan covered the territory of the present-day province of the People's Republic, Xinjiang (Sinkiang in Wade-Giles), in the far north-west, where the Uyghur are an important ethnic group.

There are clear parallels here with the intense competition within Europe that finally gave rise to the third great technological paradigm shift, the Industrial Revolution, in the second half of the 1700s (Snooks 1996, p. 316). Serious regional conflicts broke out during this period. The high degree of internal competitive pressure between 221 BCE and 311 CE is vividly illustrated by the fact that China had five different imperial capitals during this phase; periods where multiple kingdoms uncomfortably co-existed; with rapid dynastic turnover prevailing throughout the epoch (Table 5.1). The period from 311 to 581 CE, the period of the Northern and Southern Dynasties, was a period of still intense, but somewhat more settled, internal competition.

The next phase, the age of restoration, from 600 to 1800 CE (or so), opened after the defeat of the Southern Ch′en by the Northern Sui (Snooks 1997, p. 465). Central authority and the imperial bureaucracy were re-established after the bifurcated structure under the Northern and Southern Dynasties and the instability of the Early Empire. This restored the "old unity" (Snooks 1996, p. 318), which was regarded as "the right and normal state of the world" (Snooks 1996). This led directly (although technically, the T′ang dynasty, and a half-century interregnum interceded) to the clear distinction made between the civil and military spheres under the Song, who swept away the military aristocracy (Snooks 1996) as the elite warrior class was no longer required in this phase of relative tranquillity. Under the Song, the meritocratic scholar-official thus replaced the aristocratic warrior (Snooks 1996). A bureaucracy comprised of scholar-officials was the most efficient institutional mechanism for "a central government that pursued its traditional rent-seeking role" (Snooks 1997, p. 470).

5.3 Answering Needham: China's Strategic Mix During and After the Song

The Song administrative reforms required money. So too did the defence of the realm, with rising external threats in the north, first from the Manchurians and later the Mongols, becoming a pressing concern. "Barbarian" societies saw great potential gains from raiding into a wealthy urban society like China—the opposite of the incentives facing unitary Chinese dynasties considering the potential of acquisitive military ventures, positioned as they were in the world. Responding to the increasingly urgent barbarian threat, in addition to meeting the costs associated with administrative centralisation, required the government to raise substantially more revenue. To do so, tax rates[4] could be increased, economic growth stimulated, or both.

The Song leadership clearly felt that the first option was politically inexpedient in the absence of economic growth (seen concretely as increasing the agricultural surplus, as is appropriate to a Neolithic regime). Ergo, the response to the rise in

[4] A comprehensive discussion of taxation under the Song is available in Golas (2015).

external competition had to be holistic, involving an alteration of the underlying dynamic strategy from the traditional colonisation/family multiplication pairing, to one of technological change directed towards two ends: boosting the productivity of agriculture and enhancing the defence of the empire's frontiers (Snooks 1996, Table 5.1). There was accordingly a sharp rise in the strategic demand for innovation. This demand, communicated through a strategic leadership empowered by the printing press, led to a remarkable phase of technological (Elvin 1973; Mokyr 1990, pp. 209–238), commercial, and logistical (Shiba 1970) innovation, centred on agricultural techniques but also including a precocious uplift in heavy industrial output (Elvin 1973, Chapter 8; Hartwell 1962).

The agricultural innovations, diffused rapidly throughout the empire by a growing scientific and practical literature[5] and the efficiency of the bureaucracy, and backed by increasing fertiliser use and large capital investments in water management (Maddison 1998, Table 1.5a, p. 30; Perkins 1969, Table H.1, pp. 334–335) delivered productivity gains, and hence aggregate economic growth in per capita terms. The industrial innovations armed the defence establishment, which in 1040 CE stood at 1.25 million men (Elvin 1973, p. 84).[6] The Song maintained three standing armies, two of 300,000 men and one of 450,000. Elvin (1973) notes that the expense of maintaining just one of the three would have been sufficient to bankrupt the Han administration: as good an indication of China's economic progress under the Song as any.

Unfortunately for the Song though, its technological achievements in armaments production (and military organisation, including the transfer of human capital and tacit knowledge in the persons of the defecting generals) diffused to neighbouring societies, who became infinitely more formidable opponents due to the adoption of Chinese techniques. Successful invasions by the Manchurians in 1211, who captured the northern Song capital, and then the rise of the Mongol-Yuan dynasty from 1275, indicated that for all of its precocious economic development, the Song proved unable to confront the external threat effectively. The Mongol conquest emphasised that the ability to defend the frontiers (literally) was foremost in Chinese military planning: keeping the barbarian at the gate, in the now clichéd phrase. Once the frontier was breached, the remaining military infrastructure proved inadequate

[5] Maddison (1998, p. 30) notes that more than 500 official Chinese works on agriculture existed by the late Qing; 78 were compiled pre-Song, 105 during the Song, 26 during the Yuan and 310 were of Ming or Qing origin.

[6] Elvin (1973, p. 84) reports that "at the beginning of the dynasty, the Bow and Crossbow Department at the capital was turning out 16.5 million arrowheads per year. By 1160, the yearly output of the Imperial Armaments Office, *not* including provincial output, was 3.24 million weapons". Wang (2015, p. 234) concurs with these estimates for weapon output, while adding that 32,000 iron armour items were produced annually. However, he also indicates that production continued to be carried out by hand, and the scale was due to the very large number of weapon-makers assembled in the workshops of the capital Kaifeng, allowing for productivity gains from the division of labour. This was not, however, a move towards machinism.

against the veteran army of a successful conquest power such as the Mongols. A barbarian army wielding civilised Song technology was to be feared indeed.

With defeat, Song-led prosperity ended, but the Chinese empire did not collapse, although the difficulties of turning land use over from cropping to pastoral animal husbandry was a challenge in the north under the initial phase of Mongol rule (Maddison 1998, p. 26). The Mongol rulers, though, seem to have realised relatively swiftly that the centralised Song model was a rent extraction tool *par excellence*, and therefore they soon chose to maintain a court and bureaucracy along Sinitic lines, while shifting the capital of the Mongol world from Karakorum on the steppe to Dadu (Peking) in China's north-east.[7]

With the Mongol conquest, external competition once again reverted to a low level. Therefore, the strategic mix that had been adopted to confront the threat—technological change aimed at generating surpluses in agriculture, which in turn allowed for a considerable uplift in the scale of the defence effort—was no longer the most efficient available. The old colonisation/family multiplication dynamic accordingly re-asserted itself, with the potential limits of the Neolithic paradigm still far from being reached.

Maddison (1998, Table 1.5b, p. 30) reports that cultivated area increased threefold between 1400 and 1820, from 24.7 million hectares to 73.7 million hectares, while Perkins (1969, Table II.I, p. 16) shows a more than fivefold uplift in population between 1400 and 1850, with a 3.3-fold increase in cultivated area from 1400 to 1870. Those figures are a simple illustration that land, the key factor input in the "physiocratic" world view of the Chinese bureaucracy (Maddison 1998, p. 30), was far from scarce at the time of the Mongol ascent, either absolutely or relative to population. The colonisation/family multiplication strategy would have appeared to have been obviously remunerative to contemporary strategists at the time of both the Ming and Qing ascents. The technological precocity of the Song was never revisited while the empire lasted (Fig. 5.1).

Here the *Law of Human Dispersion* and the *Law of Competitive Intensity* again assert themselves. China abandoned the strategic mix that had developed under the Song, in which technological change played an important role, once the external competitive threat had receded. It was an intense external competition that begat the demand for larger surpluses to finance the defence effort, and it was the reversion to what for China was a more normal situation—manageable levels of strife contained to the empire's periphery—that allowed China to revert to its peacetime strategic modus operandi of family multiplication and colonisation. The DST therefore definitively answers the Needham question. A more efficient dynamic strategy than that of technological change was available, with the Neolithic paradigm far from exhausted. That is the path that Chinese strategists chose, just as the DST would predict based on the relevant known parameters.

[7] The Mongol dynasty thus represents an illustration of Mancur Olson's roving cum sedentary bandit hypothesis (Olson 1999).

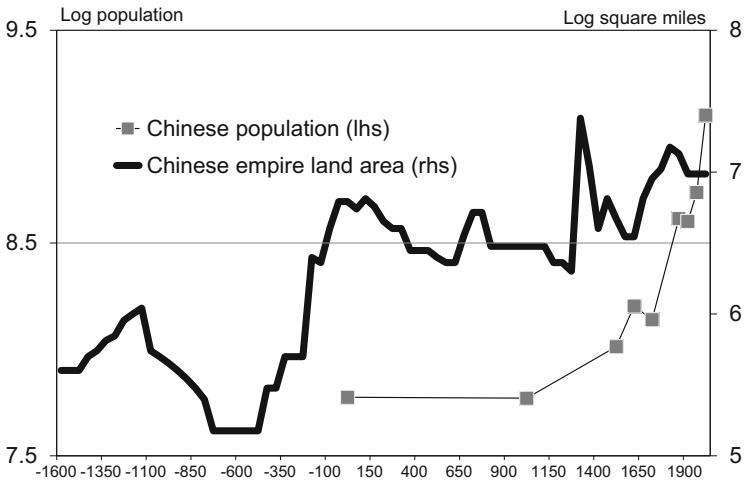

Fig. 5.1 China's population growth and dispersion strategy. Sources: Underlying land area data from Taagepera (1978, Table 2, pp. 116–117) and population data from Maddison (2009). Note: The underlying land area observation for 1300 could plausibly read 24 million square miles if the global land mass of the Mongol Empire, China's then suzerain, were plotted. For indicative purposes, the 1350 observation for the Yuan-Mongol dynasty of China proper is preferred for 1300

The Ming restoration of 1368 did not alter the basic strategic mix from the Mongol inheritance. While the first half of the 1400s brought renewed intellectual creativity, including major maritime adventures that testify to China's advanced shipbuilding and navigational skills, the result of these explorations was to reinforce the relative efficiency of the extant strategy in the collective psyche of China's strategists. Between 1405 and 1433, Ming ships ventured progressively westward. Under the command of Zheng He, they reached the east coast of Africa, well ahead of the Portuguese-led European breakout of 1492 (Snooks 1996, p. 318). In his trenchant critique of Euro-centricity in global history, Frank (1998, p. 197) offered a striking comparison to illustrate the advanced nature of Chinese maritime attainments in the pre-industrial world. Frank compared two legendary fleets that were destroyed at sea by violent storms before they could wreak havoc on their enemies. Frank notes that Spain's "invincible" Armada, which set forth for England in 1588, consisted of 132 ships. That figure is dwarfed by the 2000 strong Mongol-Yuan fleet that sailed for Japan in 1274, some three centuries earlier. The Mongol-Yuan fleet also contained twice as many ships as Agamemnon apparently took to Troy (Homer 1950). Not even Hellenic legend (infused with poetic licence) stood up to the Asiatic reality. The sophistication of Ming logistics are also lauded by Elvin (1973, pp. 102–106), centring on the Grand Canal and its use by the military, while Myers and Wang (2002, p. 598) applaud the civilian uses of the same infrastructure by the early Qing, as the most efficient conceivable short of the invention of the steam railroad. Put another way, the Chinese empire was clearly operating at or near the contemporary global technological frontier in these areas.

The maritime ventures of Zheng He entrenched Chinese feelings of superiority, which demonstrated that dynamic strategies involving systematic external interaction—conquest or commerce—were likely to be relatively unremunerative in the Sinitic world vis-à-vis inward-looking activities, given the lack of developed societies that had been encountered. This reinforced that the old mode of family multiplication/colonisation under central control, with variable subsidiary support from technology, defence, and conquest, as external and internal conditions demanded, remained the most viable for the unitary empire.

From the time of Zheng He's return through to the late Qing, China developed in an introspective and isolationist manner. Simultaneously, Europe began to move forward within its competitive maelstrom of conquest and commerce societies, assisted in part by the diffusion of Chinese technology. Unbeknownst to its leadership, by not advancing, China was becoming progressively technologically backwards—from leader to laggard (Jones 1981; Lin 2012; Pomeranz 2000; Wong 1997). China's population grew from 55 million in 960 CE, to 100 million in 1280, to 138 million in 1700, and to 381 million in 1820 (Maddison 1998, Table 1.2, p. 20) but the absence of serious competition either within or without left little incentive for ongoing technological innovation beyond agricultural "fine-tuning" and led to relatively static outcomes for GDP per capita. Indeed, with the Ming abandoning primogeniture in inheritance early in their reign (Maddison 1998, p. 21), the average farm size fell over this period, alongside the decline in the ratio of cultivated land to population. In addition, Qing territorial acquisitions,[8] which saw the empire's land area expanded rapidly between 1680 and 1820, mainly served to expand the buffer zone between the core of the civilisation and potentially aggressive barbarian societies. The idea that the primary motivation behind these acquisitions was principally to enlarge buffer zones is illustrated by the fact that the near doubling of land area to 12 million square kilometres was in sparsely populated areas contributing just 2% of the total population in 1820 (Maddison 1998, p. 39). Also, these acquisitions did not add considerably to arable land and thus Neolithic production potential. Taking into account the belt of tributary societies bordering the empire to the south-west, south, south-east, and north-east, Qing China effectively encircled itself with administered and/or economically dependent territories that served as a passive line of defence.

Snooks (1996, p. 319) argued that the first signs of population pressures, an early signpost of the potential exhaustion of the extant strategy, became evident in the seventeenth century, while Perkins (1969) argues that population began to outrun land resources by the nineteenth century, even though he notes that "in the twentieth century there was still some virgin land left" (Perkins 1969, p. 185). In terms of agricultural productivity, Perkins notes that New World crops, investments in water

[8] Mongolia was conquered in 1696–1697, the Manchurian border was extended into Siberia at the Treaty of Nerchinsk in 1689, Taiwan was annexed in 1683, Tibet in 1720, Chinese Turkestan (later Sinkiang, Xinjiang) was re-annexed in 1756–1757. These buffer zones were joined by a belt of docile tributaries stretching from the south-west to the north-east in the persons of Burma, Nepal, Siam, Annam, Korea, and the Ryukus (Maddison 1998, p. 39).

management broadly defined, and a doubling of the use of fertiliser per mou[9] between the fourteenth and nineteenth centuries, all contributed to the task of maintaining the per person calorific intake over this long period "as long as there were new lands to open up" (Perkins 1969, p. 189), but "there was little capital deepening of the type that occurs in modern agriculture" (Perkins 1969, p. 188). The wide dissemination of agricultural literature was an additional contribution to productivity, ensuring regional convergence towards best practice techniques.

5.4 Longevity of Empire in a Dynamic Strategy Mirror

Snooks (1996, p. 319) argued that the usual explanations of the durability and longevity of the Chinese are unsatisfying. He lists the "usual" explanations as isolation from other advanced societies; the stabilising influence of the bureaucracy; the unifying role of common language and culture; and China's long-held technological and administrative superiority over its neighbours (Snooks 1996). He counters that while these observations are all helpful in defining a narrative of China's long-running imperial success, they are not underlying causal explanations.

The longevity of China's empire is, rather, a function of the success of its dynamic strategies, which were in turn selected due to the unique environment that Chinese strategists faced. The comparison with Rome is instructive. To quote Snooks directly:

> Rome attempted to maximise its material advantage by specialising in the conquest strategy. This was a rational response to an economic environment in which external competition was intense, and the expected rate of return on investment in conquest was considerably higher than in trade or colonisation and infinitely higher than that in technological change. Conquest's high rate of return derived from the wealth of surrounding urban societies in a crowded Mediterranean, and the low return on technological change resulted from the abundant supplies of natural resources relative to existing world population size that remained to be exploited by the existing Neolithic paradigm. Once the conquest strategy had been exhausted, and as other replacement dynamic strategies could not be found, the Roman Empire collapsed (1996, p. 319).

As conquest strategies rely on windfall gains, they are fundamentally vulnerable to collapse when the flow of war spoils (and tribute from annexed territory) diminishes. The military and administrative costs of maintaining large territorial empires are considerable and ongoing, while the flows of new income are sporadic. Conquest empires collapse because they represent the hidden Ponzi scheme among the four dynamic strategies, rising temporarily above the Neolithic potential living standard at the expense of the conquered, only to eventually be broken on the "Great Wheel" of the eternal recurrence when an end to the flow of spoil thrusts the system back to

[9] Fertiliser was predominantly porcine waste and human "nightsoil", the supply of which obviously increased with population. A mou is a Chinese unit of area that converts to 0.1647 acres or 666.5 square metres.

the productive potential of the underlying paradigm (Snooks 1996, Figure 12.10, p. 407).[10]

The Chinese, in stark contrast to the descendants of Romulus and Remus, were surrounded by "vigorous but less sophisticated, non-urban and less wealthy people" (Snooks 1996, p. 319). While these peoples on the periphery of the empire kept border security on its toes, they rarely presented an existential threat to the empire, with even the Mongols, who disproved this rule, relatively quickly adopting the Sinitic style of central administration, as documented above.

As an aside, it is highly instructive that the Chinese military classics are considerably more pragmatic than the romantic texts of the Mediaeval West, and also convey a notion of war's place in society that differed considerably from that of ancient conquest societies. For one, the Chinese applaud the general who can shorten a siege or conflict through bribery or espionage, rather than seeking the proverbial "honourable venture". In *The Art of War* (2002, pp. 95–96) Sun Tzu (who lived from 544 BCE to 496 BCE) argued that "Raising a host of a hundred thousand men and marching them great distances entails heavy loss on the people and a drain on the resources of the State. The daily expenditure will amount to a thousand taels of silver. It is callous to begrudge the expense of a hundred taels of silver for knowledge of the enemy's situation". While Julius Caesar's *The Conquest of Gaul* (1983) and *The Civil War* (1976) are also pragmatic works in some senses, they presume war (the conquest of territory, the retention of the same, and appropriating the right to enjoy its fruits) to be a continuous, never-concluded business. And as it was his society's lead strategy—or in the terms of the era, Mars, God of War, was the genius loci of the imperial capital—Caesar's lens for viewing the world was entirely appropriate. Compare that perspective to Tzu's sentiments, which position conflict as an expensive interruption to everyday affairs that is best concluded as swiftly and efficiently as possible so that temporary soldiers can return to their day jobs. No such advice as Tzu's was ever put in the mouth of a courtly adviser in *Le Mort d'Arthur*, and such venal concerns were never voiced in *The Life of Charlemagne*. A society pursuing a systematic conquest society would not have elevated *The Art of War* to the status of a classic. Only with the onset of the Renaissance, and Machiavelli's *The Prince*, did a Western work on strategy and statecraft appear that approached such questions with detached reason.[11]

[10] Shelley's *Ozymandias* captures the spirit of the eternal recurrence perfectly:

I met a traveller from an antique land/Who said: "Two vast and trunkless legs of stone/Stand in the desert. Near them, on the sand, /Half sunk, a shattered visage lies, whose frown,/And wrinkled lip, and sneer of cold command,/Tell that its sculptor well those passions read/Which yet survive, stamped on these lifeless things,/The hand that mocked them and the heart that fed./And on the pedestal these words appear—/"My name is Ozymandias, king of kings:/Look on my works, ye Mighty, and despair!"/Nothing beside remains. Round the decay/Of that colossal wreck, boundless and bare/The lone and level sands stretch far away".

[11] "Reason" may not be precisely the right word for Tzu's aphoristic work, but his pragmatism in terms of the material trade-off between battle and bribery and Machiavelli's sophisticated statecraft are certainly in sympathy. The contract between the non-conquest elements of the strategic mix in

Getting back to the mainstream of the argument, conquest was a profitable prospective venture for China's neighbours due to China's relative wealth, but it was not a rational strategy for China itself to pursue, due to the lower living standard of its neighbours (Snooks 1996, pp. 319–320). Periodic enterprises probing west by both land and sea reinforced this idea in the collective Chinese psyche, while societies located to the east, north-east, and south tended to be dealt with via the tributary system. Therefore, a military strategy that concentrated on the needs of defence was the most efficient. Conquest was just not a viable lead, as it was in Europe, and thus offensive military capability—the ability to project force beyond the border—was not required. The implication of this defensive strategy was that China spent only as much on military activities as it felt was necessary to repel the barbarians (or keep them at the gate).

The circumstances detailed above left only two feasible dynamic strategies while the Neolithic paradigm remained unexhausted: commerce or family multiplication (and its adjunct, colonisation). Yet even here, the choice was not balanced. The same basic factor that prohibited the conquest strategy from being viable, namely the lack of prosperous neighbouring societies, also applied to a lead strategy of commerce. The DST is very clear here. The only genuine choice of lead strategy for China in peacetime, while the Neolithic paradigm remained unexhausted, was family multiplication. What changed over the course of China's imperial history was the mix of subsidiary strategies (and co-lead strategies, for shorter periods) that the Chinese employed to optimise the success of family multiplication, which was the constant.

Before 1066 BCE, family multiplication and migration reigned alone. From 1066 BCE to 221 BCE, it was internal colonisation, with conquest in a subsidiary role. Centralisation played a critical subsidiary role in increasing the efficiency of the administration. China's wars of dynastic succession determined which groups within the society would gain the most from the existing strategic mix: it was not a wrestle for control over its form. These were not Cromwellian endeavours.[12]

The nature of internal competition also mattered. Prior to 221 BCE (a proto-feudal period), there was considerable internal competition between regional warlords. However, with the first empire established under the Qin, internal competition receded. With unification came an end to feudalism, with central control established. The Han ruled via an administration of Confucian scholars, not aristocratic warriors. This mirrored the strategic mix, which was introspective, and not focused on the conquest of other societies, or even interaction with them.

Despite the pressure of strong centrifugal forces, a remarkable degree of unity was achieved by central administrations (Snooks 1996, p. 320). And despite a succession of full or partial take-overs by outsiders—Manchurians in 1211, Mongols

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which the two authors presented their arguments (Tzu family multiplication and Machiavelli commerce) is a key point of fundamental contrast.

[12] Snooks (1997, Chapter 10, pp. 274–364) details Britain's strategic mix over the last thousand years, positioning Cromwell's "Glorious Revolution" as a contest for control over the direction of the kingdom's dynamic strategy between the rising commercial classes and the old conquest-centric aristocracy.

in 1275, Manchus in 1644—the civil service-led state apparatus tended to re-establish itself as an indispensable unit for control of the family multiplication strategy. Besides these periodic "raids" there was little external competition.

The contrast with Europe after the fall of the Western Roman Empire is instructive. Europe was made up of a large number of small and highly combative kingdoms: a hotbed of competitive hostility. External competitive pressure on each political entity was intense and constant (Snooks 1996, pp. 320–321). Surviving and prospering required a high level of competitiveness and lapses were potentially existentially fatal. These intense competitive pressures motivated a conquest-led strategic mix, or a commercial strategy with a highly developed defensive capability attached to it. However, once the Neolithic paradigm was exhausted, which occurred first among the most sophisticated exponents of the commercial strategy, these pressures begat the Industrial Revolution. By contrast, with little comparative external competitive pressure after the Song, the momentum for further technological advances was dulled.

It was rational for the Chinese to revert to the low-cost exploitation of a Neolithic strategy led by family multiplication, which was almost half a millennium from exhausting. It was this relative strategic logic that ultimately left China technologically backwards, while simultaneously propelling Europe forward. China's internal strategic logic was sound while the condition of weak external competitive pressure held. Once this condition ceased to hold, with systematic European incursions into China's sphere of influence in the nineteenth century, the Qing were completely unable to confront the external challenge.

5.5 International Engagement from the Song Forward

Ahead of a discussion of Qing decline and humiliation over the course of the nineteenth century, it is worthwhile to review China's international engagement since the Song, as a further window on aggregate strategy. Elvin (1973, p. 216) notes that the Song were international traders as well as agricultural and industrial innovators. In the year 1146, Elvin (1973, p. 217) cites an ordinance that stated, "The profits of maritime trade contributes much to the national income. We ought to continue the old system by which people of faraway countries are encouraged to come and abundantly circulate goods and wealth". That rather liberal attitude under the Song morphed into a state monopoly under the Mongols and then, ultimately, prohibition under the Ming, with the notable exemption of tributary flows.[13] In the year 1407, following the annexation of Annam (northern Vietnam today), it was

[13] The distinction between "tributary" ships and "merchant" ships may have been overblown in periods where private trade was not prohibited. Elvin (1973, p. 218) cites an official who wryly noted that without tribute, there would be no trade, and even tribute ships carried goods for sale in exchange markets. In short, foreigners wishing to conduct commerce with the Chinese had to run a gauntlet of officials leveraging their position to squeeze the merchants for "considerations".

decreed that "Neither civilians or soldiers should be permitted to cross the frontier, or privately go on the seas and trade with barbarian countries" (Elvin 1973, p. 218). Further restrictive maritime edicts were issued in the years 1433, 1449, and 1452, while even coastal shipping was banned for a time—an action made more reasonable by the rising efficiency of the Grand Canal under the Ming (Elvin 1973, pp. 102–106; Myers and Wang 2002, p. 598). However, smuggling continued, and eventually it became so pervasive that the maritime edicts were partially lifted to reflect the reality.

Under the Qing, international engagement re-emerged, tentatively, from 1684 (Maddison 1998, p. 39), although progress from that point was not linear. Chinese were prohibited from travelling privately overseas in 1717.[14] In 1727 Chinese were forbidden to live abroad. Thirty years after that, Canton was made the sole coastal port for legal foreign trade. Prior to the Opium War, the only ports of ingress were Canton (Guangzhou, for the British), Amoy (Xiamen, for Filipinos), Macao (for the Portuguese), and Ningpo (Ningbo, for Tokugawa Japan and Joseon Korea). There was also an inland trading hub at Kiakhta, established by treaty with Russia in 1727, situated on the Mongolian-Russian border at the intersection of the riverine trade of Siberia and the east-west land caravan route (Maddison 1998). This status quo was retained until the treaty system that was extracted by the industrial powers in the Opium War era (Fairbank 1978).

Wakeman (1978, p. 174) argued that Qing foreign policy in the first half of the nineteenth century rested on three tenets of "long standing". The first was Chinese superiority in warfare; the second was Chinese skill in civilising outsiders; and the third was Chinese superiority in goods production, which allowed them to demand that outsiders accept tributary status. This obsolete mindset, made so by the reality of Chinese technological backwardness that had been brought about by the dramatic advances wrought by the Industrial Revolution in Europe, left the Qing extraordinarily ill-equipped to confront the foreign challenge both economically and militarily. In addition, domestic conflagrations periodically ravaged the economy and the imperial coffers, with rebellions, including the White Lotus (1796–1804), Taiping (1851–1864), Nien (1853–1868), the Muslim Panthay in the south-west (1855–1873), and the Dungan in the north-west (1862–1877) successively draining public resources, disrupting agricultural activity and inter- and intra-provincial commerce. Countless lives were thus taken indirectly in addition to the direct military losses (Kuhn 1978; Maddison 1998, p. 47, Table 2.3; Mann Jones and Kuhn 1978). Natural disasters such as the Yellow River flood of 1855 and the famines of 1877–1878 also drained Qing coffers (Maddison 1998, pp. 47–48). They simultaneously undermined the perception of the administration's heavenly mandate, emboldening anti-Manchu forces who had already observed the Qing's humiliations at foreign hands. Fairbank (1978, p. 233) summarised the latter issue thus: the "seeming appeasement of foreign invaders aroused further

[14] The trade with Japan in copper was an important exemption from this ruling, as such inflows were essential to China's bimetallic copper/silver monetary system.

xenophobia and eroded the popular acquiescence in Ch′ing [Qing] rule which constituted Heaven's mandate to the dynasty".

The foreign humiliations also drained Qing resources through indemnities, while silver outflows due to the marked deterioration in China's balance of payments over the course of the nineteenth century created challenges for domestic monetary management (Wakeman 1978, p. 173). Furthermore, it was only when foreign military assistance was forthcoming, in response to the Taipings threatening Shanghai from their up-river stronghold at Nanking, that the tide was turned in that particularly threatening phase. Until that point, the Taipings had gained control of and held the modern provinces of Guangxi, Jiangxi, the east of Hubei, Zhejiang, south Anhui, and Jiangsu (encircling the treaty port and foreign concessions of Shanghai) with relative ease (Kuhn 1978).

A voracious and corrupt bureaucracy, and rising formal taxation, alongside a poorly performing economy, underlined the sinking popularity and declining legitimacy of Qing rule. Note that the famous "*likin*" transit tax was first introduced in 1853 on Kiangsu [Jiangsu] grain travelling on the Grand Canal due to the need to finance the military effort against the Taipings, but by 1862 it had been extended to all commodities and the majority of provinces (Feuerwerker 1980, p. 61).

Turning back now to the direct foreign challenge confronting the Qing, it is appropriate to focus initially on Sino-British trading relations under the Canton system that governed commercial intercourse from 1760 to 1834. The Canton system was strictly hierarchical, with a tributary structure that prevented direct contact between foreign merchants and scholar-officials (Wakeman 1978, p. 163). Foreign traders dealt with the holders of licensed monopolies—collectively the "Cohong"—who in turn dealt with the imperially appointed head of maritime customs at Canton, the "Hoppo". The various imperial authorities (the Head of Customs, the Governor of the region of Kwangtung, and the Governor-General of Kwangsi, issued their orders to the Cohong, who would, in turn, deal directly with the British East India Company (hereafter BEIC) board (the "select committee"), leaving no place for traditional diplomacy between equals (Wakeman 1978).

The Qing believed that tributary trade, along with physically quarantined activity, provided for both stability in foreign relations and for the private profit motive to be served. Wakeman (1978, pp. 163–14) argues that the public discourse on international trade was out of synch with the realities, with commerce openly subordinated to politics, but right up to the imperial household, the profit motive seems to be clear. The fact that the Hoppo was required to transmit considerable funds from the customs revenue directly to the Emperor's private account, over and above the responsibility to the public exchequer, illustrates this clearly. Accordingly, Hoppos spent their 3-year terms enriching themselves and the Emperor at the expense of the public purse (Wakeman 1978, p. 164). The Cohong reacted to this systematic rent seeking by setting up the Consoo Fund in 1775, into which each member of the trading guild was to pay one-tenth of trade profits, to be used in times of need to meet the inevitable exactions of officials (Wakeman 1978).

The need for additional public revenues was heightened by the considerable rise in social and political disorder from the late years of the 1700s forward. The White

Lotus rebellion (1796–1804, concentrated on the Szechwan-Hupei [Sichuan-Hubei] border region) was the major initial concern. When the fighting later spread to Kwangtung (Guangdong) through the Triad uprising of 1802, alongside a spike in piracy along the coast, which included the Pearl River delta being besieged from 1804 to 1809, the concerns reached the heart of the Canton system. Quelling this instability required a considerable mobilisation of funds, which led to large and repeated requests for "tribute" from businesses for military expenditure, disaster relief, and anti-piracy endeavours (Wakeman 1978, pp. 165–166), in addition to the regular demands. These increasingly onerous extra-business costs led to increased "credit instability" among the Cohong and considerable concerns for the BEIC.

Up to 1805, the BEIC purchased tea and textiles through Canton, only half of which was collectively financed with import receipts, the other half with American silver currency (Wakeman 1978, p. 164). In that year, the relative magnitudes were 7 million Haekwan taels in Chinese exports, against 3.5 million Haekwan taels in BEIC imports. After 1805, sufficient international liquidity had accumulated among the private merchants in Canton, assisted by American silver-financed involvement in the Canton trade from 1785 and by an expanded footprint for the Anglo-Indian agency houses, for the BEIC to eschew physical silver cargoes. They borrowed instead using bills of exchange underwritten by the metals accrued by merchants but forbidden from export by decree. The bills of exchange were then cashed in London and British India, generally at Calcutta, where the agency houses were headquartered.

Instability in this triangular arrangement arose due to increasing private corruption in the customs bureau, credit instability among Anglo-Chinese monopolists and increasing competition in opium (Wakeman 1978). The Cantonese brokers intermediated between tea producers in the hinterland and the BEIC. They accepted the credit of the BEIC and were in turn extended credit by the representatives of the producers, who were in turn essentially selling their crop forward through agents. If a particular trader was rumoured to be struggling, they would need to increase the cash component of any forward purchase. However, cash was difficult to secure from the BEIC given the already large trade (and thus silver) deficit, so the Cohong member would need to accept more goods (mostly woollens) from their partner, and sell them before they could pay the "inland tea and silk men" (Wakeman 1978, pp. 165–166).

Supply-side responses to Britain's voracious tea demand had led to the development of large-scale cash crop monoculture, which limited the need for traders to buy forward to hedge against scarcity. This also encouraged the BEIC Board in London to question the "Sinisisation" of the local committee, which it felt had led to uneconomic attitudes towards merchant advances, the Consoo slush fund and payments to officials. Meanwhile, in 1813 the BEIC's Indian trade monopoly was abolished, while there was a 20-year extension in China (Wakeman 1978, p. 170). Free trade in India initially brought a boom for Anglo interests, but the European slowdown of 1827–1828 brought recession. Substitution of Asiatic indigo for "Prussian Blue" in the European dye trade hurt Calcutta merchants considerably. Chinese demand for Anglo and Anglo-Indian imports was also slackening. The rise of Singapore as a regional *entrepot* flooded Canton with the goods of the "Straits

trade" from around 1819, local competition in non-textile manufactures increased and Indian cotton lost competitiveness in Canton with Nanking cloth moving by junk now rather than overland, lowering freight costs. "Even singsongs were not selling, because the Cantonese had learned how to copy them" (Wakeman 1978, p. 171). Another wave of profitable trade was required if Britain's tea demands were to be satisfied. That new income stream was Indian opium.

The Qing administration banned opium imports in 1729, but the Portuguese continued to supply small amounts, shipping from Goa and Damao (Daman) on India's Arabian Sea coast (Wakeman 1978, p. 171). The BEIC injected itself into the trade half a century later, establishing a Patna opium monopoly in the east of India in 1773. The Patna product apparently had a quality advantage over the Portuguese controlled Malwa supply in India's west (Wakeman 1978, pp. 171–172).

By 1796, the trade had developed to a considerable degree, and the Chinese were so upset about imports of the drug that the BEIC decided not to risk its tea monopoly by importing opium directly. They instead auctioned off their crop in Calcutta to private individuals, who could then take the risks of "peddling" (Wakeman 1978, p. 172). The Chinese centre for the illicit trade drifted to Macao. From 1800 to 1818, the trade averaged 4000 chests per annum, with each weighing 140 pounds (Wakeman 1978).

From 1819, despite the Qing's legal opposition, the drug trade boomed as competition between Malwa and Patna supplies lowered prices and demand proved to be elastic (Wakeman 1978). There was an official crackdown in 1820, with 16 Chinese dealers arrested. The trade was exiled to Lintin Island, the Portuguese landing place of 1513, which had served as an outer anchorage for ships in the Canton trade, north-east of Macao and west-north-west of Hong Kong in the middle of the Pearl River estuary. From 1822 to 1830, trade from this depot boomed to a rate of 18,760 chests per annum (Wakeman 1978), an extraordinary uplift. The trade was dominated by Damao-sourced Malwa. The BEIC declared defeat on the Patna monopoly strategy and began transporting Malwa on its own ships in 1831. Trade volumes spiked higher again in the wake of this decision.

Local interests would take possession of the opium at sea having already transacted with sales officers on land. They would then transfer the contraband from hulks anchored off Lintin Island to "scrambling dragons" or "fast crabs", forty-oared armed boats that "fought or bribed their way inland up the river system to dry land distribution points, run by gangsters and Triads" (Wakeman 1978). By the early 1830s, the local supply in Canton and its environs became excessive, with enterprising traders venturing further up the coast to find new markets and better pricing. A leading trader, Jardine,[15] was the first to circumvent the saturated Canton market, pushing north in 1832 to sell directly from the deck of his ships on the Fukien and Chekiang coasts.

[15] William Jardine, a Scot, founded in this same year Jardine Matheson & Company, which is a giant conglomerate today with interests including shipping, real estate, finance, and terrestrial transport.

From a macroeconomic point of view, the dramatic penetration of opium imports had major implications for China's overall balance of payments over the first four decades of the 1800s. In the first decade of the 1800s, China achieved an accumulated surplus inflow of $26 million (Wakeman 1978, p. 173). From 1828 to 1836, however, China saw an accumulated outflow—a balance of payments deficit—of US $38 million. As indicated above, such a substantial net outflow created monetary difficulties for the Qing, and as the trade was illicit, it did not generate customs revenue. It did, however, enrich local officials privately (the scrambling dragons bribing their way up-river), which was an obvious impediment to the imperial will being enacted on the ground. The foreign benefits of opium's financial harvest were spread far afield. In 1832, for example the year before the BEIC's monopoly on the China trade expired, its profit on its Indian activities was £4 million. This was used to purchase opium, which was then auctioned off to private traders. In China, the BEIC used the proceeds of its Indian opium auctions to purchase tea for export. This was then shipped to England, raising £3.3 million in customs revenues for Her Majesty's Treasury (Wakeman 1978, p. 173). Therefore, private business and sovereign British interests were of a similar mind regarding the desirability of continuing and extending these triangular trade arrangements, despite its status, from Fairbank's (1978, p. 213) point of view, as the "most long-continued and systematic international crime of modern times".

From 1833, with the BEIC's monopoly on Chinese trade no longer, tensions began to build. Further, the private merchants of Canton and British home manufacturing interests began to lobby the British government to push for greater access to British and Anglo-Indian wares in the Chinese market (contemporary population of 400 million). Two trade embassies, one led by Macartney in 1793 and one by Amherst in 1816, had not achieved greater access. A petition to the House of Commons from the private merchants of Canton felt that more than the "refinements of diplomacy" would be required to place the China trade on a more "permanent and honourable" footing (Wakeman 1978, p. 173) thereby placing "our intercourse on a more rational basis". In the spirit of the times, a dose of gunboat diplomacy seemed to be required. Furthermore, it was assumed that the strong commercial relationships built up over time between the cooperating monopolists (the BEIC and the Cohong) meant that China's commercial classes would welcome a move towards freer trade, in sympathy with British and Anglo-Indian interests (Wakeman 1978, pp. 173–174).

Wakeman argues that this misread the attitudes of the Chinese side, who continued to operate under the perception of their own superiority while possessing knowledge of the vulnerability of the Anglo traders' financial position to any cessation of trade. Back in Britain, policymakers awaited a genuine casus belli. Those on the ground in Asia felt that London would not fight while the highly remunerative triangular trade flows continued uninterrupted (Wakeman 1978, pp. 177–178).

The turnaround in the Chinese balance of payments led to a silver drain, which contributed to inflation in China's bimetallic silver/copper system (or put another way, silver appreciated in value in terms of copper). By law, the silver/copper

exchange rate was one silver tael per 1000 copper cash coins. By 1838, however, the market rate had increased substantially to 1650 (Wakeman 1978, p. 178). This created problems for farmers paying their land taxes, which were assessed in silver but paid in copper. Some of the copper inflation was due to debasement (initially a response to lower output from the Yunnan mines), with extra coins minted in response, eight times more per annum than a century earlier (Wakeman 1978, pp. 178–179). Local magistrates using arbitrary exchange rate assessments as a fund raising tool also contributed, while silver hoarding also no doubt played a role once the pricing trend was firmly entrenched. While these domestic factors arguably explained the majority of the inflation problem (Wakeman 1978, p. 178), the external leakage was blamed at the Court.[16]

The combination of the Qing's dislike of the social impacts of opium and its supposed connection to the inflation problem via the balance of payments provoked a policy response. In 1831, the Emperor ordered that the trade at Canton be stopped and smugglers arrested, while domestic production of the crop should be suppressed. By 1836, it was clear that this approach was insufficient to outweigh the lure of the extraordinary profits to be made from the trade. This sparked a debate at the Court about the moral and practical questions in relation to the trade. One strand of argument called for the legalisation of a barter trade in the hope of stemming the silver outflow (Wakeman 1978, p. 180). Ultimately, the moral issue won, which pointed towards even more energetic efforts to enforce the existing laws.

Significant inroads into the opium trade were made under the more energetic approach, such that trafficking had reached a virtual standstill in early 1837, with widespread arrests of onshore dealers. Then, in an attempt to eradicate the scourge completely, the Emperor appointed the moral zealot Lin Tse-hsu as his Imperial Commissioner for Frontier Defence and dispatched him to Kwangtung. Lin had come to imperial notice through a memorial he had written while Governor-General of Hupei and Hunan. Lin's memorial proposed a holistic approach to dealing with the opium issue, incorporating both demand and supply-side remedies. On the demand side, he proposed rehabilitation centres for addicts and progressively tougher penalties quarter-by-quarter if they were unable to kick the addiction. After a year in a state sanatorium, the penalty for remaining an addict was death. In terms of the supply side of the industry, he argued for equally harsh treatment of all traffickers, whether Chinese or foreign, the latter having been left relatively unmolested to date (Wakeman 1978, p. 184).

On the basis of the memorial, the Emperor summoned Lin to Peking, where he granted him a remarkable 19 audiences, after which he bestowed sweeping powers upon him with a mandate to "radically sever the trunk from its roots" (Wakeman 1978, p. 185). Lin was thus empowered to pursue his objective in such a fashion that it would undoubtedly seriously impact foreign interests and might reasonably be

[16]This is not unlike the response to inflation in late Tokugawa Japan when the "expel the barbarians" movement was promoted as an inflationary cure, rather than tackling the underlying issue of fiscal and monetary indiscipline. See the discussion in the previous chapter.

predicted to lead to a violent confrontation. Upon arrival in Canton, he demanded that local Hongists inform their foreign merchants that they had 3 days to abandon their inventories of the drug and sign undertakings to eschew the trade in future. Delays would mean that arrested Hongist hostages would be executed and have their property expropriated. He then took the unprecedented step of issuing an order for the arrest of a prominent Taipan, Lancelot Dent, who headed the second largest trading concern and was president of the British Chamber of Commerce (Wakeman 1978, p. 187). When news of this prospective indignity reached Macao, a British Captain by the name of Elliot set off with all his available warships, and arrived to find the factories blockaded by Lin's troops, thus imprisoning 350 foreigners, a trade embargo instituted and a labour boycott in place. Lin made it clear that if the foreign traders surrendered their opium, the blockade would be harmlessly lifted. Elliot was able to avoid violence by convincing the traders to hand over their complete inventory, on the basis of a promise that the British government would reimburse them for the lost product. Lin began the destruction process immediately and felt many parts of the way to success, sensing the "obedience" of the foreigners at this exercise of Chinese moral superiority (Wakeman 1978).

The final task was to secure the foreign merchants' signatures on Lin's bonds, which were undertakings to permanently eschew the trade. A merchant who signed such a bond and later caught trafficking would face execution. This extremity was of course in direct conflict with Palmerstonian foreign policy, where an Englishman abroad could expect his government's protection against "arbitrary foreign prosecution" (Wakeman 1978, p. 188). Therefore, this became an issue of extra-territoriality, which both Lin and Elliot acknowledged. Rather than submit, Elliot chose to evacuate the British community of Canton to Macao, where they came under the somewhat reluctant protection of the Portuguese. This did not accord with Lin's plans, but he felt that the lure of profits would bring the British back in due course.

The spark for the tinder came with the accidental murder of a Chinese national by a mob of drunken British sailors. Unfortunately, the dealer of the actual death blow was impossible to isolate among the group that had beaten the man with sticks (Wakeman 1978, p. 190). This incident brought the extra-territoriality issue to a head. The British refused to turn over any individual to the Chinese, whereas the Chinese demanded reparation of a life for a life. Lin thought to break this stalemate by again playing the blockade card, cutting Macao off from mainland supplies. The Portuguese immediately expelled the English, who returned to their ships and anchored across from Hong Kong. Lin's plan was essentially a siege tactic: wait until their on-board provisions ran out and rely on hunger and thirst to bring the English to heel. Forced to extremities, Elliot tried to extract provisions by the threat of a cannon. When the threat alone was not enough, he opened fire on the Qing junk fleet, which he routed. These were the first salvoes of the as-yet undeclared war (Wakeman 1978, pp. 190–191).

Once the informal skirmishing turned to warfare in earnest between 1839 and 1842, British superiority over the Qing in both arms and organisation was palpable (Wakeman 1978, pp. 195–208). Chinese defeat was codified in the Treaty of Nanking, which was signed on 29 August 1842. The Treaty of Nanking was a

humbling document for the Qing administration. It outlined an indemnity payment of $21 million; it forcibly opened five "treaty ports" to foreign trade (Canton, Amoy, Foochow, Ningpo, and Shanghai); and perhaps most importantly in terms of the self-perception of the Celestial Empire, it stipulated equal and direct intercourse between officials of corresponding rank (Fairbank 1978, pp. 213–214). British consuls exercising this privilege would be installed at each and every port. In other words, this was no longer a relationship that the Qing could credibly describe as a tributary. The Treaty also abolished the Cohong monopoly, there was to be a "uniformly modest" tariff on imports and exports, and the island of Hong Kong was ceded as British Territory (Wakeman 1978, pp. 211–212).

It is important to realise that the Treaty of Nanking was a hastily arranged document that reflected British interests in returning to commercial normality as soon as possible; and Chinese interests in getting the British fleet to disarm as swiftly as possible, with the preliminary concessions designed to appease while giving the Qing leadership time to re-group, with an eye to containing further encroachments (Fairbank 1978, pp. 218–219; Wakeman 1978). The lack of explicit extra-territoriality provisions is one example of its incompleteness, as is the absence of a "most-favoured-nation" clause that defines bilateral trade treaties and multilateral trade pacts to the present day. A secondary agreement, signed in late 1843 at the Bogue, corrected these initial omissions (Fairbank 1978, pp. 222–223).

Fairbank notes that the most prominent omission from both the Nanking and the Bogue documents was opium. The opium question remained morally noxious for the Confucian sensibilities of the Qing Court; it was also becoming increasingly unpopular back in England. Meanwhile, the merchant lobby on the ground was pushing for legalisation, which the Court could not formally countenance. Therefore, neither side of the negotiations was willing to put forward any proposal on the opium trade to which the other side could publicly agree, leaving the trade to develop informally (Fairbank 1978). Thus Britain's "commercial invasion" (Fairbank 1978, p. 223) moved forward in two streams: a legal non-opium trade through Hong Kong and the five treaty ports, and an illegal trade in opium, which flourished, hidden in full view. Annual opium import volumes increased to 60,000 chests in 1860, more than triple the 1830 level.

British forces were again in the field in the late 1850s, this time reaching the capital (in league with the French), extracting the de jure rights and privileges they felt should have been settled after the Bogue. Over the course of the 1850s, tensions grew as the new Hsien-feng Emperor, who ascended to the throne in 1850, allowed his officials to ignore or circumvent the diplomatic elements of the Sino-British Treaty by eschewing direct contact with consuls and ordering that all attempted diplomatic communication at Tientsin [Tianjin], Shanghai and Nanking be referred to the imperial commissioner at Canton. The response was an initial Anglo-French effort to open discussions on a treaty revision in 1854. While they met with some success negotiating with the local authorities in Shanghai, Peking granted nothing, increasingly distracted as it was by the Taiping Rebellion and other smaller outbreaks of violence, such as the Red Turbans in Kwangsi in 1855. Britain's casus belli emerged in October 1856 when the *Arrow*, a ship registered in Hong Kong, with

British ownership and Chinese crew, was taken by the Chinese police as a pirate vessel (Fairbank 1978, p. 256).

The local British response was to resort to gunboat diplomacy, threatening and periodically firing upon Canton, but the local Chinese leadership hung on and refused to negotiate. British home politics and the Indian mutiny delayed the onset of open hostilities, by which time the French had also stumbled upon a casus belli[17] of their own. The combined Anglo-French force that eventually took the field in the last days of 1857 numbered 5700. Canton capitulated swiftly in the face of the superior European firepower, with the Anglo-French force taking possession of the city. When an attack on the city by the Kwangtung rural militia was repulsed by artillery fire in July of 1858, Peking's hopes of containing this latest threat (and of rendering the Tientsin documents signed with Britain, France, Russia, and the USA[18] in June, of which more below, obsolete) were dashed. From the Anglo-French perspective, the next 2 years would involve extracting terms from Peking (Fairbank 1978, pp. 247–249), including diplomatic representation at the Court itself, opening further lines of ingress for commercial activity, in addition to a further indemnity.

The two decades following the conclusion of the Opium War established a pattern for the remainder of the Qing administration's half-century or so of further humiliation at foreign hands. The pattern was (1) a swift foreign resort to force at perceived slights, and then (2) a rapid disbursement/demobilisation when Qing concessions were forthcoming. Ultimately, by 1917,[19] these foreign tactics led to 92 treaty ports being established, including some far inland up the major river systems, with 19 foreign nations exercising extra-territoriality rights and China's traditional defensive land buffers ceded to foreign powers (Maddison 1998, pp. 42–43). This included Russia taking territory in Manchuria all the way to the Pacific coast, establishing Vladivostok, while also expanding at China's expense in central Asia. France and Britain took former tributary territory in Indochina (1885) and Burma (1886), respectively (Maddison 1998).

Overt pressure from Japan began in 1870. Japan first took the Ryukus (including Okinawa) and then Taiwan. Japan also sent gunboats to Korea, another tributary of the Celestial Empire, in 1876. The Japanese proceeded to open treaty ports in Korea along European lines. Then in 1894 Japan intervened militarily in Korea and defeated the Chinese navy off the Yalu River (Maddison 1998, p. 43). They then took the peninsula (including Port Arthur and Dairen). The resulting Sino-Japanese Treaty of Shimonoseki ceded Korea to Japan, along with additional treaty port

[17] The judicial murder of a French missionary named Father Chapdelaine, in February 1856. See Fairbank (1978, p. 247).

[18] The Russian and American envoys were neutral observers travelling independently in the wake of the Anglo-French force, opportunistically securing their own treaties with the Qing negotiators. See Fairbank (1978, p. 249).

[19] This is a relevant year as it captures the concessions made by the military autocrat General Yuan Shikai (Maddison 1998, p. 45), who effectively ruled China from the abdication of the Qing until his death in 1916. See the forthcoming discussion in Sect. 5.6.

access. There was also a massive initial indemnity of 200 million taels, which was later raised to 230 million taels as compensation for the Japanese withdrawal from Liaotung. This demand was made of the Japanese by the foreign powers, who had interceded in the settlement, but of course they added the cost to China's tab. China had to finance the indemnity by borrowing gold from those same powers. The previous chapter highlights that the payment of the indemnity was a massively stimulatory event for Japan's industrialisation strategy. Indeed, it is a tipping point in the long-run trajectories of the two countries. In the wake of Shimonoseki, there was a flurry of further concessions claimed as Russia, Germany, France, and Britain (who extracted a lease on the New Territories of Hong Kong) scrambled to extend their spheres of influence. The Qing dynasty was tottering and the carve-up of China's carcass was on in earnest (Maddison 1998, pp. 43–44). Figure 5.2 depicts a French cartoonist's impression of these events, published in 1898, with the European powers[20] and a Japanese samurai apportioning slices of a pie labelled *Chine*, with a remarkably unflattering caricature of a Chinese mandarin[21] expressing his powerless dismay at the scene.

5.6 Self-Strengthening: A Half-Hearted and Thus Doomed Attempt to Engage with the Industrial Global Strategic Transition

The Tientsin episode of 1858–1860 led many Chinese intellectuals to question the basic tenets of Qing foreign policy. Recall that these tenets were, as stated by Wakeman (1978, p. 174), Chinese superiority in warfare, Chinese skill in civilising outsiders, and Chinese superiority in goods production, which meant foreigners would always be willing to accept tributary status. Each of these tenets was palpably out of date. Chinese defeat in the field to superior European military technology invalidated the first and the third. On the second, the foreign powers had learned to call the bluff of the Chinese diplomatic method. They had correctly diagnosed the approach of gradually dishonouring treaty concessions that were acceded to principally to accelerate the de-mobilisation of the barbarians. Further, the foreign powers had shown, forcefully, that they would not accept tributary status—indeed, nothing

[20] The European figures are Queen Victoria of Britain, Kaiser Wilhelm II of Germany, Tsar Nicholas II of Russia and France's Marianne. The top-knotted Japanese figure does not resemble the bearded and moustachioed Emperor Meiji and may thus be taken as a caricature of a samurai.

[21] This figure is unmistakably similar to the caricature described and satirised by the Belgian cartoonist Hergé, (Georges Remi) through the eyes of Tintin in *The Blue Lotus*, which was first published in serial form from August 1934 to October 1935. *The Blue Lotus* (Hergé 1984) was an important landmark in European popular attitudes towards East Asians, although its depictions of Japanese aggression and Chinese subordination were far from subtle. It was voted the eighteenth best book of the Twentieth Century by readers of *Le Monde*.

Fig. 5.2 The carve-up of China: a *Belle Époque* perspective. Source: Meyer (1898), reproduced from WikiMedia Commons

short of extra-territoriality privileges and the removal of China's tariff autonomy, alongside full diplomatic equality, proved to be acceptable.

Faced with these facts, a period of Chinese introspection proceeded, with the resultant reformist movements variously grouped under either "self-strengthening" *tzu-ch'iang* [*zi-qiang*] (Kuo and Liu 1978, p. 491) or "Westernisation" *Yang Wu Yun Dong* banners (Lin 2012, p. 58). Kuo and Liu (1978, p. 491) date the origin of the self-strengthening phrase to 1861, the year following the 1860 settlement. They argue that the quest for "wealth and strength" [*fu-ch'iang*] (Kuo and Liu 1978) required a new form of statecraft that gradually gained precedence over the

Confucian ideal of commercially and technologically disinterested "government by virtue" over the course of the final half-century of the Qing dynasty.

Lin (2012, p. 58) states that the credo of the self-strengthening/Westernisation movement was "Chinese learning for fundamental principles and Western learning for practical application". Implicit in this credo is the entrenched belief that Chinese institutions were superior to barbarian models across all states of nature (in the terms of this study, strategic mixes). The corollary then is that with the judicious import of technology, China could re-assert itself quickly. However, this formulation goes against the clear import of the DST: a change in a society's strategic mix requires a change in the supporting institutions of that society. There is no single ideal institutional framework that is optimal for achieving the basic desires of survival and prosperity under all material strategic forms. The Confucian bureaucracy was well suited to the exercise of the family multiplication strategy under the Neolithic paradigm. It was completely unsuited to the pursuit of a technological strategy under the industrial paradigm. Maintaining the basic elements of the traditional institutions meant that China's move towards industrialisation could never have been more than skin deep. It is also critical to recall that there was an upsurge in political instability over this period, as a number of groups challenged the authority of the Qing. With hindsight, we can see that this crescendo of civil strife was different from the dynastic clashes of the imperial era, which were fought for control of the fruits flowing from the existing strategic mix centred on family multiplication. Under the late Qing, many groups were losing confidence in the strategic bona fides of the leadership, with the weak capitulation in the Opium War, and all succeeding clashes with foreign forces leading up to the regime collapse in 1911, successively undermining what confidence remained in the legitimacy of Qing rule, as the strategic mix they favoured was bringing penury and submission, not prosperity.

This sequence of events is entirely consistent with the predictions of the DST. Intense competition, such as that provided by the foreign powers in the nineteenth century, altered the calculus on the most desirable strategic mix for China, which in turn generated urgent demand for institutional reform. When vested interests resisted such reform, competition for control of the society's strategic direction intensified.

A number of sophisticated Qing thinkers with experience dealing with Europeans understood that deep reforms were required, including to the education system and the civil service examination. This line of thinking recognised the obsolescence of the basic tenets of Qing foreign policy. Kuo and Liu (1978, pp. 492–496) highlight the roles played by a group of both high and middle ranking officials such as Prince Kung, Chao Shu-chi, Wei Mu-t′ing and Wei-hsiang. The latter stated that "The policy that gets to the fundamentals is self-strengthening and the way to strengthen ourselves must first be to train troops...It is urgently necessary to do our best to re-invigorate ourselves so that when the barbarians are compliant we can live in peace with them and when they are recalcitrant we shall be prepared" (Kuo and Liu 1978, p. 493). And further, "The training of troops is essential to self-strengthening, but the manufacture of equipment has priority while the troops are being trained", which would require "a thorough study of the various kinds of equipment and to gain knowledge of all the secrets of the foreigners, so that we can defend against

aggression in times of trouble and demonstrate our strength in times of peace" (Kuo and Liu 1978, p. 495). At a practical level, Wei Mu-t′ing, a censor, deduced from the commercial motivations of foreigners that they would be willing to both sell advanced weaponry to the Qing, and to instruct Qing troops in their use and, most importantly, educate local artisans in their manufacture (Kuo and Liu 1978, p. 494).

Away from Peking, provincial leaders and generals fighting against the Taiping were an additional lobby group favouring a closer engagement with Europeans on military technology. Unsurprisingly, it was those thinkers in close contact with Europeans, away from the silo of the imperial Court, who began to look beyond the hardware aspect of Qing backwardness and to question the appropriateness of the overall institutional status quo. Three such men were Tseng Kuo-fan, Tso Tsung-t′ang, and Li Hung-chang. The former was present in 1862 when Anglo-French cannon swept aside a Taiping assault on Shanghai (Kuo and Liu 1978, p. 496). The latter was the leader of the Anhwei Army and was in close contact with Tseng. Tso was the Governor-General of Fukien and Chekiang from 1863 to 1866. In 1862, Tseng wrote that "In order to attain self-strengthening, improvement in administrative affairs and the search for virtuous talent are after all urgent tasks; but one concrete effort should be to learn the casting of cannon and the construction of steamships and equipment" (Kuo and Liu 1978). In the same year, Li advocated "to have China adopt barbarian ways. . .and to work harmoniously with foreign armies while seeking methods of self-strengthening" (Kuo and Liu 1978, p. 497).

Li's practical prescriptions to facilitate the adoption of barbarian ways were to establish a foreign language school in Shanghai whose curriculum would include Western science and mathematics and to foster exposure to international knowledge and experience through sponsored travel and foreign education (Kuo and Liu 1978, pp. 537–542). He even used the phrase "reform of institutions" (Kuo and Liu 1978, p. 498) in a letter to Prince Kung, the powerful advocate of self-strengthening at Court. Li bemoaned the emphasis on impractical literary knowledge in the examination system, juxtaposing this model with the honours and social position accorded to the "makers of machines" in the West. He proposed a new category in the civil service examinations for experts in technology (Kuo and Liu 1978, p. 499). Li's educational reform ideas were not pushed forward aggressively by Kung, but in tandem with the efforts of Tseng, imperial funds were procured to establish the Kiangnan Arsenal in 1865, alongside other state-sponsored efforts in shipping, shipbuilding, and munitions, some of which developed their own training schools for artisans (Kuo and Liu 1978, pp. 532–537).

Tso's attitude to the need for institutional reforms is neatly encapsulated in the following: "Chinese wisdom operates in the abstract, while foreign intelligence attaches to the concrete. . .Since we are inferior to foreign countries in this respect, we should let them lead us. We should not let them monopolise their capacities" (Kuo and Liu 1978, p. 500).

The foregoing section illustrates that there were a number of prominent Qing thinkers who were not insensible to the need for fundamental reform if the foreign challenge was to be met more effectively than heretofore. Unfortunately for these potential industrial strategists, they faced a powerful counterweight in the form of the

conservative Dowager Empress Cixi[22] [Tz′u-hsi, 1835–1908] and her faction at Court. While the institutional reformers had a vehicle for advocating change—the Tsungli Yamen—imperial sanction for any shift in policy was required. Cixi's attitude appears to have been that described in Lin (2012, p. 58): "Chinese learning for fundamental principles and Western learning for practical application". The exchequer was willing to finance projects such as the Kiangnan Arsenal and Foochow Navy Yard as well as the purchase of naval and munitions hardware (Kuo and Liu 1978, pp. 519–525), but the reconstruction of the social order through reforms of the examination system was just too dramatic to countenance.

Cixi's periodic undercutting of Prince Kung's position at Court, alongside her policy of promoting conservative scholars to prominent positions, weakened the momentum of the self-strengthening movement from the early 1870s, timing which coincided with an increase in foreign competitive pressure, after the relative calm of the 1860s (Kuo and Liu 1978, p. 517). As the century aged and the foreign humiliations began to mount, conservative scholar-officials increased their open attacks on anyone felt to be overtly sympathetic to a policy of foreign engagement. Such actions were characterised, pejoratively, as appeasement.

The events of the 1890s showed that while the self-strengthening movement left some important concrete legacies, it was a failure on the most basic count: that of providing China with effective defensive ability against foreign aggression (Kuo and Liu 1978, p. 491). With the loss of the Sino-Japanese War, Qing China fell to a new low in terms of its global standing, its fiscal position and its ability to exercise sovereignty within its borders. The 100 days of reform in 1898 was the final flourish of the self-strengthening movement, the suppression of which saw China descend into a strategically frustrated decade of ultimately impotent nationalism, highlighted by the debacle of the anti-imperialist Boxer uprising that straddled the turn of the century. Allied forces took Peking on 14 August 1900, and the imperial household was forced to flee to Sian (Xi′an).

This spectacular setback led even the most conservative elements of the Court to see that reform was an urgent imperative. An imperial edict was accordingly issued on 29 January 1901. It stated bluntly that Chinese learning of the "fundamentals of the wealth and strength of the West" had to date been superficial (Ichiko 1980, p. 375). It went on to ask high officials to consider "what things should be kept as they are now and what should be changed among Court regulations, state precedents, civil administration, people's welfare, education, civil service examinations, military systems and financial administration and so on? What should be eliminated, and what should be combined together, and what should be found within?" (Ichiko 1980, p. 375).

This remarkable document was essentially asking the Qing elite to redesign their institutional base, as the status quo had been shown to be a hindrance in a world where Chinese superiority was no longer taken for granted—and was in fact a completely obsolete position. In terms of the DST, there was an obvious tension

[22] Cixi was de jure joint regent with Empress Dowager Ci′an, whom she apparently dominated.

between the institutional requirements of the family multiplication model, the competitive requirements of the foreign industrial challenge and the required socio-political apparatus that would sponsor successful Chinese participation in the industrial GST.

The reforms that flowed from this period of introspection included a major remake of the education system, entailing a large increase in the number of schools under the auspices of a newly formed Ministry of Education and the abolition of the civil service examination system in 1905 (Ichiko 1980, pp. 376–383). Military reforms were also enacted (Ichiko 1980, pp. 383–388). Support for moving towards a constitutional polity increased through this period as well, with the outcome of the Russo-Japanese War, won by the constitutional monarchy of Meiji Japan over Tsarist Russia, an apparent stimulus (Ichiko 1980, pp. 388–389). Maddison (1998, p. 44) though argues that "procrastination" best describes the approach to constitutional reform in the period leading up to Cixi's death in 1908, which followed that of her nephew the Emperor by a day. Even following her passing, a national parliament was not convened in 1909, despite the establishment of provincial assemblies.

The centralisation of financial control was also pursued, to correct a chaotic and disorganised situation that featured silver-copper bimetallism in tandem with the circulation of various foreign tenders, alongside independent minting capability at the provincial level (Maddison 1998, p. 403). Add to that the ongoing trade deficit and mounting foreign debts (including the gold raised to pay the Japanese indemnity in the 1890s) and it is easy to see that even if China had their very own version of Matsuzaka, the Meiji administration's able monetary pilot, there was no guarantee of success given the profundity of the problems. History shows that the stumbling efforts at monetary and fiscal reorganisation were interrupted by civil war in 1911, which in Ichiko's (1980, p. 407) memorable phrase "cut short the make-believe".

Each of these reform initiatives can be seen as part of an effort to align China's institutional set-up with the needs of participation in the industrial GST. Unfortunately, the reforms did not fall on fertile ground. Internal conflict would plague the economy for much of the next two decades. Relative internal stability was achieved under the Kuomintang (hereafter KMT, the republican-nationalist political party founded by Sun-Yatsen) from 1928, but this too was soon punctured by the Japanese invasion of Manchuria, followed by the unmitigated outbreak of war with Japan in 1937.

5.7 From the Demise of the Qing to the People's Republic

The 1911 civil war was sparked by the secession of a number of regional assemblies in October-November of 1911, following what Maddison (1998, p. 44) describes as a "clumsy government proposal" to nationalise private rail concerns in Wuchang. A small time later, on Christmas Day 1911, provincial delegates in Shanghai provisionally declared Dr. Sun-Yatsen President of the Republic of China, an entity that was scheduled to emerge on the first day of calendar 1912. Sun-Yatsen had been an

advocate for the nationalist cause since the 1880s, mostly among Chinese student communities abroad. The regent recalled General Yuan-Shikai as Premier, and the General convinced the new Dowager Empress to abdicate; while Sun-Yatsen stepped down from the Presidency in Yuan's favour, which ushered in a phase of military rule (Maddison 1998, pp. 44–45). Yuan would rule as autocrat until his death in 1916, from which point the country descended into a multipolar struggle between regional warlords.

Sun-Yatsen was forced into exile in 1913 when the military's actions indicated that they had no plans to institute a democratic polity. Yuan declaring himself President for life, while ordering the assassination of the KMT's parliamentary leader, sent rather direct messages on this score. Sun-Yatsen initially fled to Japan. He returned to the mainland after Yuan's death, shuttling between Shanghai and Canton until his death in 1925, attempting to build a power base and attract foreign finance for the nationalist democratic cause (Maddison 1998, p. 45). In 1923, he secured Russian Bolshevik funds and in-kind support. The Bolsheviks naturally encouraged him to partner with the newly formed CCP, founded in 1921. With this Russian assistance, the KMT set up a power base in Canton and a military academy at nearby Whampoa, where the Commandant was Chiang Kai-shek, Sun-Yatsen's leading disciple, who had been trained for the task in Moscow (Maddison 1998).

Following Sun-Yatsen's death in March 1925, Chiang ascended to the leadership of the KMT, with the backing of the Party's military wing. His military credentials enabled Chiang to brush aside his left-leaning and more experienced leadership opponent Wang Jingwei. A little over a year after Sun-Yatsen's death, he pushed north with his 85,000 strong National Revolutionary Army in late July 1926 (Maddison 1998). By the end of the year, KMT forces had captured the important cities of Wuhan and Foochow and controlled seven provinces. Nanking [Nanjing] and Shanghai were entered in the first half of 1927, assisted in the latter instance by a general strike organised by the CCP (Maddison 1998).

Chiang now lurched to the right of the spectrum, double-crossing his CCP allies and the left wing of his own party. The latter move was no doubt at least partially motivated by a sense of personal vulnerability based on Wang Jingwei's ongoing presence. The former was an attempt to build the confidence of capitalistic interests in Shanghai for fund raising and security purposes. The trust of the capitalists was short-lived though, as he soon turned to extortion to find the funds he required for the coming struggle (Maddison 1998). Chiang's KMT clashed with Japanese forces at Shantung in 1928 but was able to reach an agreement with regional warlords later that same year to support a national government located at Nanking, led by the KMT. The regional warlords would be allowed to operate semi-autonomously as long as they recognised and acknowledged the ultimate authority of the centre. Chiang also achieved great success in reclaiming tariff autonomy, although as detailed below, the KMT had a very narrow window to turn its attention to economic matters.

As for the CCP, Chiang's actions in 1927 led to a predictable schism. The CCP survived this era despite being relatively unsuccessful in its attempts to garner popular support in urban areas. Young CCP leader Mao Zedong's profound insight

was that the rural peasantry represented the key latent political force at the CCP's disposal, infused as they were by the frustrations of millennia of oppression at the hands of the landed gentry. This made them a fertile ground for the planting of communist doctrine. Mao consolidated his hold over the CCP on the Long March from Kiangsi to Yenan in Shensi (Shaanxi). Over the 2 years of the Long March, from 1934 to 1936, the peasantry was wooed by the CCP's populist policies of land redistribution. This policy succeeded where the attempt to establish flourishing urban Soviets had failed. In the military sphere, guerrilla tactics allowed the CCP forces to hold their own against the superior arms and numbers of their opponents (Maddison 1998, p. 45).

The foreign threat, this time in the form of Japanese aggression, re-intensified from the early 1930s. Japanese forces occupied the whole of Manchuria over the course of 5 months from September 1931, with the Kwantung and Chosun Armies pushing onwards into China in advance of imperial sanction from Tokyo. The KMT government appealed to the League of Nations for support, but no concrete action emerged (Maddison 1998, p. 46). Japanese forces then attacked Shanghai in 1932, forcing the KMT government to retreat inland from Nanking. The Manchukuo puppet state was established in 1933, encompassing three Manchurian provinces and Jehol (which constituted parts of inner Mongolia, Hopei, and Liaoning), meaning Manchukuo encircled Peking and Tientsen.

The next major Japanese advance occurred in 1937, with Peking and Tientsin falling in July. The infamous massacre at Nanking occurred in December 1937, by which time the KMT had moved the seat of government to Chungking [Chongqing] in the south-west. In so doing, the KMT left a major proportion of China's modern productive capability in Japanese hands. That was despite the KMT's attempt to transport moveable capital stock inland and the effort to destroy fixed capital stock that would be of use to the Japanese (Lin 2005, pp. 191–193).

Japanese forces took control of the crucial cities of Wuhan and Canton in 1938. It took the Japanese a year and a half to occupy the entirety of eastern China, with the exception of the treaty ports. The resultant puppet states were later consolidated under a KMT defector in Nanking (Maddison 1998, p. 46). Chiang avoided major engagements with the Japanese after 1938, while the CCP remained in Yenan, maintaining its guerrilla tactics. An uneasy truce between the KMT and CCP held while the common enemy, Japan, remained in occupation, but civil war beckoned.[23]

Following Pearl Harbour in 1941, which drew the USA into the Pacific War, Japan was forced to concentrate its attention on non-Chinese theatres of war (once it had secured control of the treaty ports). Four years later, defeat by the Allies forced Japan out of China. China's civil war began in 1946.

[23] A fascinating personal account of these years is contained in the memoir of novelist Yuan-Tsung Chen (2022), born in 1929, who experienced a bourgeois upbringing in Shanghai and Wuhan, and then lived through the tumult of the first two decades or so of the People's Republic as a central government official.

The CCP had one million fighters, but the KMT had almost three million (Maddison 1998, p. 46). In addition, the KMT had diplomatic recognition from Russia and the USA. The USA ordered the Japanese troops in China to surrender to KMT forces, which provided the latter with substantial weaponry to go with their numerical advantage over the CCP. However, the popularity and legitimacy of the KMT had been undermined by the inflationary policy they had pursued during the war years. The hyperinflation that emerged in the aftermath of the conflict, as well as the behaviour of the "corrupt" KMT elite in re-occupied areas, undermined their popularity further (Maddison 1998). The CCP was perceived to be somewhat less rapacious, and the peasantry was, of course, supportive of their land reform plans.

It was at this point that Stalin altered the balance. Russia was awarded Manchuria at the Yalta conference, which it had occupied in the final week of the war. Russia's eastern forces stayed mobilised in Manchuria for a year, until the middle of 1946, and they naturally backed the CCP. The Russians proceeded to direct the arms seized in the Japanese surrender in Manchuria towards the CCP, neutralising the monopoly of this privilege previously enjoyed by the KMT in the south and east. Control of Manchuria also came with possession of the heavy industrial plant and mining operations that had been installed there, a powerful platform for its owners to leverage. The conflict between the CCP and the KMT would rage for 3 years before Mao's forces decisively gained the upper hand, allowing him to declare the founding of the People's Republic of China on 01 October 1949.

5.8 Conclusions

This chapter presented a high-level discussion of Chinese history from the founding of the unitary empire to the rise of the People's Republic. The general DST framework was brought to bear on China's remarkable historical experience over more than two millennia. The DST framework was first used to produce an alternative taxonomy of Chinese history. It was then used to derive distinctive explanations for the two major historical conundrums that China's experience has presented to scholars, namely the Needham question and the unique longevity of its unitary empire. These high-level contributions to the debate on the broad sweep of China's imperial past were complemented by an extended discussion of the stark relative decline under the Qing. At every point, the utility of the DST framework was identified and highlighted.

The longevity of China's empire was argued to be the direct result of the success of its basis strategic mix, with family multiplication and migration in the lead. The contrast with conquest empires, which are fundamentally vulnerable to collapse due to the underlying mismatch between their revenue stream and their cost base, was emphasised. The *Law of Human Dispersion*, the *Law of Eternal Recurrence*, and the *Law of Competitive Intensity* were repeatedly invoked to elucidate China's most efficient strategic mix through time. The key parameters informing the choices of Chinese strategists vis-à-vis those positioned closer to the world's various

competitive maelstroms were its relative isolation; the relative lack of prosperous neighbours who would have provided the foil for remunerative external engagement; and the existence of under-utilised reserves of the key Neolithic input, land, right up to the time of the Republican era.

The lack of a follow-through industrial revolution in the wake of the cluster of innovations that occurred under the Song was also explained with reference to the above laws. The change in the strategic mix under the Song reflected the rise in competitive intensity at the time. The need to produce larger agricultural surpluses to finance a heightened defence effort created strategic demand for technological innovation. When competitive pressures again subsided, the strategic mix adopted by the Song was no longer the most efficient. With the Neolithic paradigm far from exhausted, the Mongol, Ming, and Qing dynasties successively pursued variants of the family multiplication and migration/colonisation strategies, augmented by central control and fine-tuning of agricultural techniques. These strategies were in keeping with the pre-Song world of low external competitive pressure, relative abundance of land, and the dominant role played by the introspective, rent-seeking bureaucratic elite.

In effect, China's lacked a forcing ground for systematic innovation, as resources were not scarce under the Neolithic technological umbrella and external competitive pressures did not provide the kind of existential threat that would have altered the strategic calculus at the societal level. China's great misfortune was that the fundamental conditions influencing the strategic mix in Western Europe provided such a forcing ground. China's Neolithic fine-tuning was no match for Europe's industrial revolution, regardless of China's acknowledged technological lead dating back to the previous millennium.

In the wake of the European discontinuity, which invalidated the basic tenets of the Qing dynasty's foreign policy, systematic engagement between the two societies increased through Sino-British trade at Canton. The Qing leadership was very slow to recognise the obsolescence of their world view, which turned on the assumed innate superiority of the Celestial Empire. Successive humiliations at the hands of British, other European and then Japanese forces, in parallel with rising internal instability, progressively weakened the legitimacy of the Qing from the late 1830s onwards, and ultimately eroded China's freedom of independent sovereign action. Attempts at reform were limited and piecemeal until the final moments of the dynastic era, as the conservative elements at the Court resisted the strategic logic put forward by the self-strengthening movement; while the Republican era that succeeded Qing rule was characterised by both continued foreign incursions and incessant internal instability. A final humiliating defeat in the second Sino-Japanese War brought to a close a disastrous century for the Chinese people.

The following chapter will consider the performance of the Chinese economy from the Qing to the present day within the strategic framework utilised for the first and second-generation industrialisers in Chap. 3 and for Japan in Chap. 4. This will provide an empirical counterpoint to the historical and theoretical narrative presented above. That discussion will include a detailed exposition of China's strategic path over the first three decades of the People's Republic.

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Chapter 6
China's Economic Performance and Strategic Pathway from the Late Qing to the Death of Mao

6.1 Introduction

The previous chapter considered China's remarkably long history of unitary empire through the lens of the DST. That discussion provides essential background for the detailed examination of Chinese economic performance and strategic inclination, from the late Qing to the death of Mao, which is the *raison d'être* of this chapter. The framework introduced in Chap. 3 and utilised at length in the case study of Japan in Chap. 4 will be the medium for the debate. Just as Chap. 3 served as a bridge between the "high theory" of Chap. 2 and the practical application of the theory to Japan in Chap. 4, this chapter bridges the "macro history" of traditional China presented in Chap. 5 with the systematic examination of the People's Republic of China in the reform era comprises the chapter that follows.

The first task of this chapter is to conduct a broad empirical survey of China's economy since the late Qing, taking the period as a whole. The second is to reach a judgement on the timing of China's entry into industrialisation. The third is to highlight the timing and nature of the multiple strategic and *anti*-strategic kinks over time prior to the onset of the reform era in 1978.

The first conclusion reached is that the traditional economy remained dominant right up to the early years of the People's Republic and thus the inception of a society-wide industrialisation strategy cannot credibly be dated any earlier. That is despite the rapid growth of manufacturing output delivered by "enclave industrialisation" in the period from 1890 to 1937. The second is that while launching and deepening industrialisation was clearly a major focus of the policies pursued by the CCP leadership from 1949 to 1978, the framework was in reality anti-strategic. The Maoist model systematically eschewed outward engagement, competition, and the use of market-based price signals to guide decision-making. Shutting down these signalling mechanisms is the very definition of anti-strategic behaviour. Pursuing these ends required the construction of an internal rent-seeking apparatus that redistributed income away from the rural majority through distortionary

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institutions, while defying the society's comparative advantages. Furthermore, Mao's political paranoia continuously derailed the economy with abrupt changes in policy direction that served to undermine the power of more pragmatic voices. Pervasive uncertainty is of course inimical to strategic confidence, sustained economic growth and its objective, material success for society at large. An anti-strategic posture can never set the positive self-reinforcing dynamics of the *Strategic Accelerator* in train.

The arguments put forward will become increasingly more data-intensive as the chapter proceeds. This reflects the growing availability of robust statistical raw materials as the distance to the present shrinks. In China's particular circumstances, data availability increased dramatically after the founding of the People's Republic in 1949. Beforehand, it is necessary to rely on snapshots of the economic structure in benchmark years and on point-to-point comparisons. This does not handicap the strategic scatter plots that frame strategic diagnoses from era to era. However, the advantages bestowed by detailed annual time series will be leveraged to highlight the destructive impact of Mao's periodic anti-strategic strikes against any move towards a mixed economic system.

6.2 China's Relative Living Standards over Two Millennia

China's status as a Neolithic leader who became an industrial laggard is starkly illustrated in Fig. 6.1. For the first 1600 years of the Common Era, the average Chinese resident enjoyed a living standard very close to the world average and between two-thirds and three-quarters of the frontier economy of the day. That was despite the burden of providing for the world's largest population since the sixteenth century and the second largest, behind India, prior to that time. That relative state of affairs was unsettled by accelerating economic growth in the frontier economies of Western Europe in the wake of the maritime breakout of the late 1400s (Jones 1981; Pomeranz 2000; Snooks 1996). Coupling this fact with relatively static GDP per capita outcomes in China in the late Ming and early Qing, it becomes clear that China began to consistently fall back relative to the frontier from 1500 CE or so. With the exception of the period from 1700 to 1820, this decline continued, unarrested, until the early years of the People's Republic, at which point Chinese living standards were just 4% of the frontier and just 16% of the average.

China's dramatic rise as a manufacturing powerhouse in the years since 1978 (McKay and Song 2010) leaves an imprint as least as vivid as the evidence of its precipitous multi-century decline. In effect, China has managed to recover one-half millennia of relative losses vis-à-vis the global average in just four decades. Chinese living standards were back above the world average as of 2013 and it is fast approaching 30% of the frontier. China's breathtaking re-emergence is a brilliant example of the fruits that are available to those societies that successfully embrace an outward-oriented industrialisation strategy from a position of backwardness. That story will be reflected in a DST mirror in the following chapter. It is, however, the

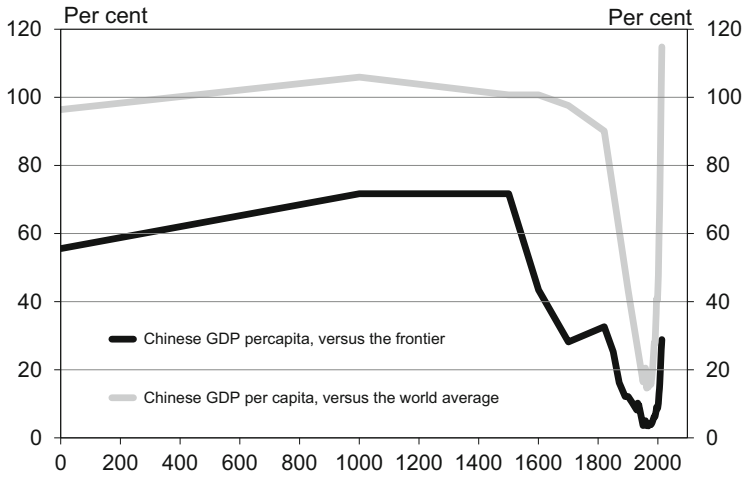


Fig. 6.1 China's relative living standard over two millennia. Source for Fig. 6.1: Underlying data prior to 1950 are in 1990 international dollars comes from Maddison (2009), with calculations and extensions by the author using the 2020 update of the Maddison dataset by the Groningen Growth and Development Centre, using 2011 international dollars. Average world GDP per capita is based on the arithmetic average of countries in the dataset prior to 1950, and on weighted world GDP per capita after 1950. The final observation is for 2018

future progress of the black line in Fig. 6.1—which captures China's performance relative to the frontier societies of the world-system, not the average—which is the ultimate concern of this book.

6.3 China's Relative Living Standards and Absolute Relevance since 1820

Table 6.1 merges raw scale and per capita rankings from 1820 forward. It documents that the share of world GDP accounted for by the Chinese economy fell from around one-third in 1820 to just one-twentieth in both 1952 and 1978, at which point its global ranking had fallen as low as four in terms of its absolute size, despite still housing more than one-fifth of the world's population. Also in 1978, less than $1 of every $100 of global export earnings generated in that year went to China, rendering it almost completely irrelevant to the servicing of aggregate traded sector demand. It is no exaggeration to say that at this point the Chinese people had reached a relatively low point that would have been deemed impossible based on the prevailing psychology underpinning the Celestial Empire when the nineteenth century dawned.

Figure 6.2 illustrates China's relative collapse in the now hopefully familiar strategic scatter plot framework. As it has been some time since such a scatter plot has been presented (late in Chap. 4 to be exact) the number plane used in the

Table 6.1 China's world-system status from 1820 to 2018

Percentage share of...	1820	1890	1913	1952	1980	1990	2000	2010	2018
World GDP	32	13	9	5	6	8	10	14	16
World population	36	26	25	22	22	21	20	19	18
GDP/ capita vs world average	89	50	37	24	27	36	48	73	86
GDP/ capita vs world frontier	33	12	10	5	7	8	10	20	24
World exports	3*	2	2	1	1	1	3	9	10
GDP rank (absolute size) 1990 dollars	1	2	3	3	3	2	2	2	1
GDP rank (absolute size) current dollars	Na	Na	Na	Na	4	3	3	2	2

Source for Table 6.1: Based on Maddison (1998, Table 3.3, p. 56) with updates and extensions by the author. *Indicative estimate. See explanation in text

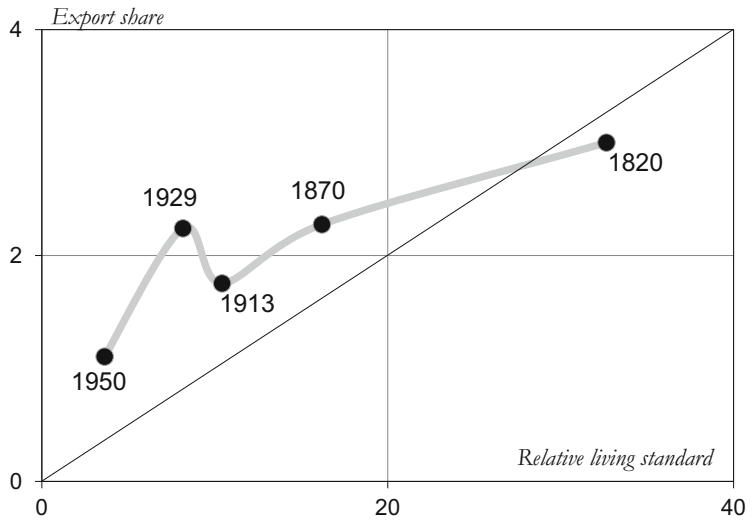
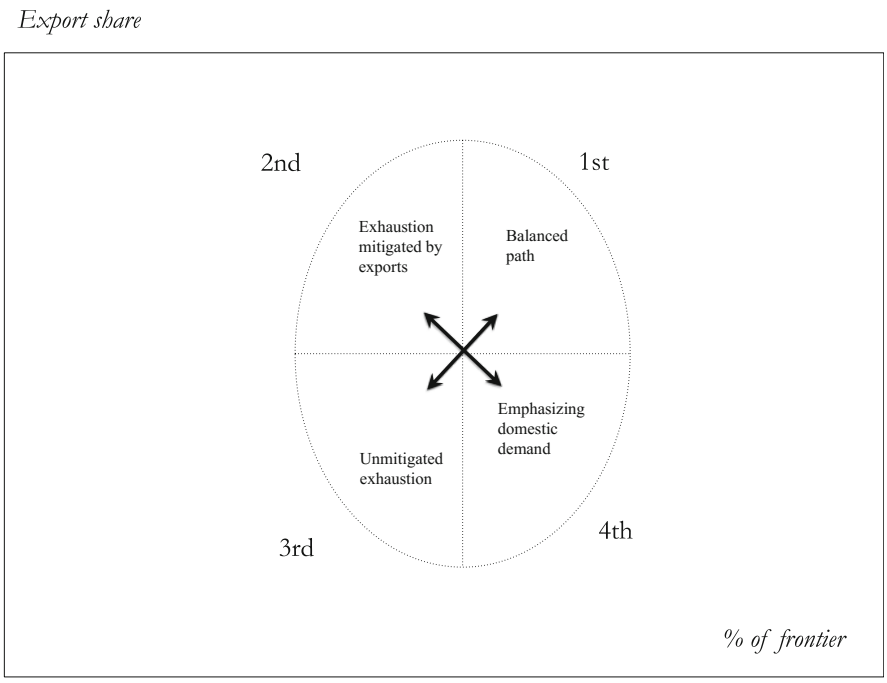


Fig. 6.2 China's strategic malaise: 1820–1950. Source for Fig. 6.2: Maddison (1998, Table 3.3, p. 56) for all figures up to 1995, with updates and extensions by the author. *Export share for 1820 is an indicative estimate. See explanation in text

schematic diagrams of Chap. 3 has been included as a memo item. China spent the entirety of the period from 1820 to 1950 producing outcomes indicative of strategic exhaustion, or in this instance, perhaps failure is a more appropriate term. The periods from 1820 to 1870 and from 1870 to 1913 are in the least desirable third quadrant. The period from 1913 to 1929 passed through the second quadrant, which is also indicative of exhaustion failure, albeit mitigated temporarily by gains in export market share (see the discussion of the second quadrant in Chap. 3). Even here, the case can be made that this lift in export market share had more to do with a

decline in civilian economic activity among the combatants of World War I than any China-specific factor.



Memo item to Fig. 6.2: recapping the strategic quadrants. Source for memo item: adaptation of Figs. 3.3 and 3.4

China certainly garnered a lesser benefit from the favourable conditions that World War I produced for non-combatants than did the Japanese, who were by this stage industrialising in earnest (see discussion in Chap. 4). The period from 1929 to 1950 saw a return to the third quadrant once again, despite the fact that the global recession that began in 1929 held back the major frontier economies deep into the 1930s, while China was obviously not unique in suffering the depredations of war. So even in a period when the task of doing relatively better required the least impressive absolute performance, China was not up to the challenge.

There is no commonly accepted figure for China's share of world exports in 1820 or earlier. Maddison (1998, 2003), Rostow (1978), and Bairoch (1982) do not offer an estimate. Nor, indeed, did the earlier quantitative economic historians (Clark 1938; Kuznets 1930; League of Nations 1983; Mulhall 1892) on whose combined contributions much later study has been based. They either ignored China entirely at this early stage of the industrial GST; they excluded the external sector from their work during this early period of the industrial era; or they included China within broader regional groupings without transparently decomposing the aggregated estimate.

Given the requirements of the framework utilised in this study, this is an important gap. Filling it requires an indicative estimate of China's world export share for this benchmark year. The method chosen was to first of all compare the ratio of China's share of world GDP to its share of world exports for later years where both estimates are available. Having observed those actual relativities, it remained to choose a reasonable ratio for 1820 based on one known input (a 32.4% share of world GDP in that year) and the exercise of qualitative judgement given the environment of the time. If the same ratio between world GDP share and world export share pertaining in 1890 (approximately 8)[1] is used for 1820, an indicative 4% world export share is derived. However, with trade still very much contained to a tributary style commerce at the treaty ports in 1820, and the purchasing power of Western and Asiatic traders much more limited at this time than it would later become, a higher ratio than the 8 for 1890 (a lower implied export share of Chinese GDP) seems more plausible. Furthermore, as the first and second generations of industrial nations traded more and more among themselves, as well as through expanded core–periphery relationships within their empires as the nineteenth century aged, an absolute share for 1820 that is as low as that of 1890 seems unreasonable given the large difference in China's GDP share in the two periods. Given that information, a ratio a little more than a third higher than the 1890 actual ratio was chosen, from which an indicative 3% world export share was calculated.

It is important to recognise that even if this estimate is too high or low by a significant margin, it does not alter the fact that the estimates of Chinese GDP per capita growth in the benchmark years indicate very clearly that China was a consistently poor relative performer through this phase. Hypothetically, a much lower starting point for China's world export share in 1820, say 1%, would see the forthcoming 50-year phase passing through the second quadrant rather than the third. Metaphorically speaking, that is a temporary stay of execution on the matter of exhaustion, not a full pardon. An abrupt re-orientation is required to forestall a movement into the third quadrant once a society is mired in the second quadrant, noting that the third quadrant represents the proverbial "death sentence" for the viability of the extant strategic mix.

A much higher estimate for China's world export share in 1820 than assumed would merely serve to steepen the gradient of relative decline. It would not alter the directional strategic bias. A higher export share in 1820 would simply indicate that China was closing on the origin at a more rapid pace. In short, if China was more important to the global export trade in 1820 than estimated, its actual relative decline would have been even more precipitous than implied by the indicative estimate of 3%. In sum, whatever value is assumed for China's export share in 1820 (the *y*-coordinate), one cannot gloss over the simple fact that the *x*-coordinates (i.e. China's relative living standard vis-à-vis the frontier) in Fig. 6.2 were moving closer to the

[1] The arithmetic is 13.2 (world GDP share in 1890) divided by 1.7 (world export share in the same year), which equals 7.76, which is rounded to 8.

origin rather than away from it for the entirety of the 130 years that the data encompasses.

6.4 The Nature of Chinese Strategy before 1890 as Revealed by the Composition of Economic Activity

The discussion turns now to the structure of the economy over time and the identification of the approximate timing of the strategic kink where China adopted an industrialisation strategy. The Qing strategic mix described at length in the previous chapter, which determines economic structure, was clearly coming under considerable strain as the 1800s aged. The ability to increase the area under cultivation was close to being exhausted, while the population continued to grow. The quantity of farmland increased by just 1% between 1873 and 1893 and was unchanged from the latter level through 1933 (Feuerwerker 1980; Table 2, p. 5). With the rural population increasing by some 31% in the 1873–1933 period, the worker–land area ratio increased considerably and the average farm size in wheat-growing regions declined, even though the average farm in rice-growing regions increased slightly in area (Feuerwerker 1980, Table 3, p. 5). With such a high proportion of the population occupied by agriculture, famines (which occurred in 1877–8, 1892–4, 1900, 1920–21, 1928, 1931, and 1935) were a threat not only to food security narrowly defined but also to the livelihood of the majority of China's population. The key productive sector remained agriculture and the population remained predominantly rural, but the ability to increase per capita surpluses from this base was very much in question (Perkins 1969; Riskin 1975).

There was thus emerging evidence that China was in need of a replacement strategic mix by the time of the late Qing, even if one views the system as a closed economy perfectly isolated from global forces, which by that point in history it clearly was not. The DST makes it clear that impending exhaustion operating alongside an intensification of competitive pressures is an extremely dangerous strategic cocktail for any society. The relevance of these points is that demand for strategic change will intensify with the recognition of actual or imminent exhaustion and thus the search for a replacement strategy should be underway when such conditions emerge. The obvious direction for this search in the Chinese instance was to seek a strategic mix that would provide both an increase in domestic living standards and the ability to deal more effectively with the specific nature of the external competitive threat it was confronting. The latter objective could only be met by the elevation of a dynamic strategy of technological change to the forefront of society, through an industrialisation drive. Therefore, the search for the strategic kink should be conducted from the point at which basic societal demand conditions began to change.

The previous chapter illustrated that the self-strengthening movement, whose beginnings date to the early 1860s, represented a key moment in terms of a sub-set of

the elite recognising that a change in basic approach was required. That must be the chronological starting point for the investigation. Just as it would be fruitless to look back further than the early 1860s for evidence of a strategic kink taking China towards an industrial strategy, there is a broad consensus that the remainder of the 1800s can also be excluded. Feuerwerker (1980, p. 1) states that "There was little of the Chinese economy prior to the twentieth century that was not included in the agricultural sector or quite intimately connected with it." Two-thirds of economic activity was apparently accounted for by agriculture in the 1880s (Feuerwerker 1980, Table 1, p. 2), with secondary industry comprising just 6.1% of the total, split 1.43%, 3.77%, and 0.9% between mining, manufacturing, and construction, respectively, with handicrafts the majority technique within the manufacturing component. Feuerwerker (1980, pp. 15–16) notes that handicraft production remained the dominant form of manufacturing in the key cotton cloth sector up until the outbreak of World War I (Feuerwerker 1980, Table 9, p. 25). This situation persisted until at least the 1930s.[2]

Maddison (1998, p. 47) supports Feuerwerker's position on China's state of industrial backwardness by arguing that the modern element of the economy was "miniscule" as of 1890. Rawski (1980, p. 6), the definitive authority on heavy manufacturing prior to the founding of the People's Republic, states that "At the time of China's republican revolution in 1911, activity in the producer sector was limited to a handful of isolated units". Rostow (1978, pp. 532–533) timed China's industrial take-off to the distant point of 1952,[3] while Perkins (2013a, p. 24) states flatly that China did not experience modern economic growth prior to 1949. These arguments have a cumulative force regarding the timing of China's embrace of industrialisation—there is a great deal of evidence that an industrial strategy was not being pursued in the nineteenth century. Or if it was being pursued, it met with little success, having left little trace either empirically or in a narrative sense.

Table 6.2 presents the composition of Chinese international trade at 10-year intervals beginning in 1870, by which time the treaty system was well entrenched (Fairbank 1978). The dominant positions occupied by farm produce and simply transformed manufactures in China's exports as of 1870 are notable, with tea and silk-related products together accounting for almost 90% of export revenues. As of 1910, their joint share had declined to just over one-third, at the expense of "other",

[2] Feuerwerker (1980, pp. 15–16) is worth quoting at length here: "Simplistic indictment of "foreign capitalism" by some contemporary Chinese historians for having "crushed" and "exploited" domestic handicraft industry from the mid-nineteenth century onward is belied by the actual state of the Chinese economy as late as the 1930s. In the middle of that decade, even in the cotton textile industry which allegedly suffered most severely from the "incursion of foreign capitalism", 61% of the cotton cloth produced in China (in square yards, if the unit of measurement were yards, it would be 73%) was woven by handicraft methods. Anyone who would claim that the Hunan or Szechwan (Sichuan) peasant in the 1930s dressed in Naigaiwata cottons, smoked BAT cigarettes, and used Meiji sugar has a big case to prove".

[3] Note that Rostow placed the take-off for Manchuria 20 years earlier, in the 1930s. This is in reality an observation on the successful transplanting of Japan's industrialisation strategy to a resource rich jurisdiction, rather than a validation of indigenous Chinese endeavour.

Table 6.2 The composition of China's trade in goods: 1870–1910

Percent of total									
Import	Opium	Cotton piece goods	Cotton yarn	Cereals, sugar, tobacco, and flour	Coal and kerosene	Metals and minerals	Machinery	Railway equip and material	Other
1870	43.0	28.0	3.0	0.1	0.1	5.8	Na	Na	20.0
1880	39.3	24.9	4.6	0.5	1.2	5.5	Na	Na	24.0
1890	19.5	20.2	15.3	10.5	4.8	5.7	0.3	Na	23.7
1900	14.8	21.5	14.3	10.5	9.7	4.7	0.7	Na	23.8
1910	12.0	14.7	13.6	14.5	6.5	4.3	1.5	3.8	29.1
Export	Tea	Silk and silk goods	Foodstuffs*	Hides, leather, and skins	Raw cotton	Wool	Coal	Other	
1870	49.9	38.8	2.4	Na	0.5	Na	Na	8.1	
1880	45.9	38.0	0.3	0.5	0.2	0.4	Na	14.5	
1890	30.6	33.9	1.0	1.4	3.4	1.6	Na	27.8	
1900	16.0	30.4	4.4	4.3	6.2	1.9	Na	36.0	
1910	9.4	25.4	15.1	5.3	7.4	2.5	1.5	32.0	

Source for Table 6.2: Feuerwerker (1980, Tables 17 and 18, p. 49). *Seeds, oils, beans, flour, eggs, and egg products have been merged into the foodstuffs category

foodstuffs, raw cotton, and animal hides. Such a steep decline in the share of tea and silks seemingly implies a major change in the economy's composition as well as an alteration to global demand patterns.

It is notable that the largest declines for tea and silks come after 1890, when foreign direct investment (hereafter FDI) into China began to accelerate, boosting the modern industrial base housed on the mainland. Foreign investment accelerated dramatically after the first Sino-Japanese War, as the Treaty of Shimonoseki legalised foreign factory production at the treaty ports (Feuerwerker 1980, p. 29).[4] The two most aggressive early investors were Japan and Britain (Feuerwerker 1980, Table 11, pp. 30–31; Maddison 1998, p. 48), its two largest trading partners at the end of the "long" nineteenth century, if Hong Kong is excluded (Feuerwerker 1980, Tables 19 and 20, pp. 51–52). By industry, in the period from 1895 to 1913, nearly half of the foreign investment in China (in terms of initial capital) went to mining (48.4%), and a further 16% went to foodstuffs. Engineering and shipyards (2.8%), spinning and weaving (12.1%) and electric power and water works (11.1%), sectors where China could have benefited substantially from technology transfer, were clearly secondary to the desire to take advantage of China's primary endowment (Feuerwerker 1980).

The self-strengthening movement (see the discussion in Chap. 5) contributed some concrete gains in terms of indigenous industrial capacity. This was initially concentrated on state-financed arsenals and shipyards, later extending to steam shipping, modern coal mining, textile factories and ferrous metal smelting. However, the impact of these developments must have been extremely modest in macroeconomic terms, given the very low share of activity accounted for by modern manufacturing. The combination of indigenous initiatives and rising foreign investment left only the most modest trace in national accounting estimates up to 1890.

Looking specifically at data on industrial production, Bénétrix et al. (2012) is an excellent comparative reference point. Bénétrix and his coauthors have managed to collate annual time series information for 31 countries from 1870 to 1889; 41 countries from 1890 to 1913; 55 countries for the interwar period and 175 countries for observations post-dating 1989 (Bénétrix et al. 2012, p. 3). The year 1889 is the first for which a reliable series for Chinese industrial production is available.

The authors' experiences in compiling this impressive database led them to the conclusion that "By and large, it seems reasonable to surmise that the data tend to become available only when countries start to industrialise. At least in the days before uniform statistical reporting standards, it is hard to see why a poor country would have computed industrial output indices prior to the onset of modern industrialisation. The data allow us to track the spread of industrialisation across the periphery in a fairly robust manner" (Bénétrix et al. 2012, p. 5).

Following that practical, albeit circular logic, China is very unlikely to have adopted an industrialisation strategy prior to the appearance of industrial production

[4] There was also a surge in domestic company formation in the 1890s, following the inauguration of a Commerce Ministry.

Table 6.3 Structure of Chinese GDP in constant 1933 yuan, 1890–1952

Per cent of GDP	1890	1913	1933	1952
Farming, fishing, and forestry	68.5	67.0	64.0	55.7
Handicrafts	7.7	7.7	7.4	7.4
Modern manufacturing	0.1	0.6	2.5	4.3
Mining	0.2	0.3	0.8	2.1
Electricity	0.0	0.0	0.5	1.2
Construction	1.7	1.7	1.6	3.0
Traditional transport and communications	5.1	4.6	4.0	3.8
Modern transport and communications	0.4	0.8	1.5	2.8
Trade	8.2	9.0	9.4	9.3
Government	2.8	2.8	2.8	Na
Finance	0.3	0.5	0.7	Na
Personal services	1.1	1.2	1.2	Na
Residential services	3.9	3.8	3.6	Na
Total four service activities*	8.1	8.3	8.3	10.4
Total	100	100	100	100

Source for Table 6.3: Maddison (1998, Table C.1, p. 155). *Government, finance, personal services, and residential services. These divisions are not available separately for 1952

data in the very late 1880s. By the logic of the DST, the observation that the Chinese did not compile data on industrial output prior to 1889 reflects the fact that the nation's institutions had not yet been reformed to accommodate the needs of discretionary participation in the industrial GST. As outlined in Chap. 5, the conservative elements of the Qing Court, and the rent-seeking bureaucracy at large, were intent on pursuing a strategic mix led by family multiplication supplemented by agricultural fine-tuning. Ergo, the strategic leadership had no material incentive to devote administrative resources to the measurement of industrial output.

The foregoing discussion on the availability of data on industrial production is completely consistent with the qualitative consensus on the traditional nature of China's economy throughout the 1800s, as well as the composition of the national accounts estimates for the 1880s documented by Feuerwerker (1980, Table 1, p. 2) and Maddison's (1998, Table 3.2, p. 56) reconstruction for 1890, which is reproduced as Table 6.3. The comparison with the considerable industrial progress made by Meiji Japan in the final quarter of the nineteenth century, documented at length in Chap. 4, is a stark and unflattering one for China. In this regard, it is worthy of note that Bénétrix et al. (2012) report annual Japanese industrial production figures dating from 1874.

6.5 Evidence of Industrialisation between 1890 and the Rise of the People's Republic

The foregoing discussion served to exclude the period before 1890 as a realistic possibility for the beginning of China's embrace of an industrialisation strategy. The next question is to assess whether Perkins (2013, p. 24) is correct in timing China's entry into "modern economic growth"—a term used by the orthodoxy that is essentially analogous to successful engagement with the industrial GST in the terminology of this study—to the years beyond World War II. In short, is there a case to be made that China had adopted an industrialisation strategy prior to the rise of the People's Republic?

In contrast to the discussion of the pre-1890 period, there is a firmer quantitative foundation on which to base the argument. Some key evidence in presented in Tables 6.3 through 6.7 on the following pages. Table 6.3 details Maddison's (1998) estimates of the structure of the Chinese economy at various benchmark years, beginning in 1890 and ending in 1952. Table 6.4 details the compound annual growth rates for GDP, its components and related aggregates, as reported in the same source, calculated by the author. Table 6.5 reports the growth rates of Chinese IVA for the periodisation favoured by Bénétrix et al. (2012). Panel (a) of Table 6.6 reports Rawski's (1980) estimates of output volumes of various critical producer goods from 1912 to 1952. Panel (b) of the same Table indicates compound growth rates between benchmark years, calculated by the author. Table 6.7 reports Perkins' (1975) estimates of the investment share of Chinese GDP, defined as gross domestic capital formation, for 1933, 1952, 1957, and 1970, under various deflator systems.

Table 6.4 Growth rates by national accounts sector: 1890–1952

Compound annual percentage growth	1890–1913	1913–1933	1933–1952
Farming, fishing, and forestry	0.6	0.7	−0.4
Handicrafts	0.7	0.7	0.3
Modern manufacturing	8.1	8.1	3.2
Mining	2.9	5.0	5.9
Electricity	Large	18.9	4.8
Construction	0.6	0.7	3.7
Modern transport and communications	4.0	4.0	3.5
Traditional transport and communications	0.3	0.3	0.0
Trade	1.1	1.1	0.2
Government	0.6	1.0	Na
Finance	2.9	2.9	Na
Personal services	0.9	0.9	Na
Residential services	0.6	0.7	Na
Total four service activities*	0.8	1.0	1.5
Total	**0.7**	**0.9**	**0.3**

Source for Table 6.4: Underlying data from Maddison (1998, Table C.1, p. 155) as per Table 6.3. Growth rates are calculated by the author

Table 6.5 Growth rate of Chinese industrial production, 1890–2007

1890–1913	1920–1938	1950–1972	1973–1989	1990–2007
7.8	5.3	9.2	8.4	9.8

Source for Table 6.5: Underlying index from Bénétrix et al. (2012), Table A.2, p. 40). Growth rates are calculated by the author

Table 6.6 Output volume and growth, selected commodities, 1912 to 1952

Panel (a) *Volume of output*	1912	1923	1933	1936	1943	1949	1952
Iron ore ('000 tonnes)	221	1243	1903	2922	10,170	588	4287
Pig iron ('000 tonnes)	8	171	471	670	1794	252	1928
Steel ('000 tonnes)	3	30	30	414	923	158	1348
Soda ash ('000 tonnes)*	0	0	35	103	57	88	192
Cement ('000 tonnes)	90	349	727	1243	1830	660	2860
Electric power (million kwh)	53	291	2074	3075	5220	4310	7260
Coal (million tonnes)	5	7	22	34	50	32	66
Panel (b) *Compound percentage growth rates*		**1912–23**	**1923–33**	**1933–36**	**1936–43**	**1943–49**	**1949–52**
Iron ore		17.0	4.4	15.4	19.5	–37.8	93.9
Pig iron		32.1	10.7	12.5	15.1	–27.9	97.0
Steel		23.3	0.0	139.9	12.1	–25.5	104.3
Soda ash		0.0	Large	43.3	Na	Na	29.7
Cement		13.1	7.6	19.6	5.7	–15.6	63.0
Electric power		16.7	21.7	14.0	7.9	–3.1	19.0
Coal		3.1	12.1	15.6	5.7	–7.2	27.3

Source for Table 6.5: Volumes in Panel (a) from Rawski (1980, Table 1.1, p. 6). Growth rates in Panel (b) are calculated by the author. *Figures for soda ash (an input for glass manufacturing with a diverse range of other applications across heavy industry) are capacity rather than production from 1912 to 1936, while the 1943 figure is for Manchuria only. See note (a) in Rawski (1980)

Table 6.7 The investment share of Chinese GDP under various deflators

Per cent of GDP	1933	1952	1957
Gross domestic capital formation			
1933 prices	5	16	17
1952 prices	7	19.5	23.5
1957 prices	–	–	21

Source for Table 6.7: Perkins (1975, Table 6, p. 134)

Given data availability and our knowledge of events, the essential judgement to be made is whether the structure of Chinese economic activity in the benchmark year of 1933, in the interlude between the establishment of relatively stable national government under the KMT in 1928 and the formal declaration of the second

Sino-Japanese War in 1937, is of a nature consistent with a discretionary industrialisation strategy, or whether the "consensus" *post bellum* (the civil war between the CCP and the KMT) timing is still considered appropriate.

Recalling the discussion in the previous chapter, the events of 1928 brought the period of instability and fragmentation under regional warlords to a close. China also regained aspects of its economic sovereignty in this year, most notably its tariff autonomy. A central bank was also established, although it was not independent of the Finance Ministry. The onset of open hostilities with Japan in 1937 saw a substantial interruption to civilian economic activity, while control of the country's modern capital stock, predominantly situated on the coast in the vicinity of the treaty ports, was soon lost to the occupying force. Furthermore, a fiat monetary system was established in 1936, replacing the silver standard, with the KMT pursuing an inflationary policy to finance the defence effort via the printing press of the captive central bank. The year 1933 then, being basically equidistant from the structural breaks of 1928 and 1937, is indeed a benchmark year in terms of its utility regarding a diagnosis of strategy. The relative tranquillity of 1933 may also explain why scholars have been able to uncover sufficient primary source material to compile a credible set of national accounts for China in this year.

Consider Table 6.3, which details estimates of the structure of Chinese GDP at 1933 prices, for the years 1890, 1913, 1933, and 1952. The first point of note is that traditional sectors retained a dominant share of total activity between 1890 and 1933. Agriculture experienced only a very modest decline in its share of just 4.5% over the 43-year period, with more than three yuan out of every five earned across the economy still attributable to this sector in 1933. Handicrafts saw virtually no change in their total share. Traditional transport and communications still far outweighed the modern equivalent. The corollary of these observations is that modern sectors had made extremely modest headway in terms of boosting their aggregate economic footprint. Modern manufacturing represented less than 3% of activity in 1933; modern transport and communications less than 2%; and electricity production less than 1%.

The foregoing analysis implies very strongly that from a compositional point of view there is compelling evidence *against* the proposition that the Chinese economy was "modern" or "industrialised" in 1933 and a great deal of evidence that the bulk of economic activity was conducted along traditional lines. Moving from absolute activity shares to rates of growth though and the picture becomes a little less clear. Table 6.4 reports compound growth rates for the national accounts sectors between benchmark years; while Tables 6.5 and 6.6 (on the following page) report compound growth rates for total Chinese industrial production and the level and growth of the output of a number of important basic industrial inputs, respectively. The growth rate of modern manufacturing in Maddison's national accounts estimates (Table 6.4) was actually very impressive in both the 1890–1913 and 1913–1933 phases, being 8.1% in each period, versus growth in handicrafts at 0.7% in each period. Bénétrix et al. (2012) report a similar trend of robust growth in industrial production prior to 1933 (Table 6.5). Rawski's estimates of the production of important individual

commodities indicate that the heavy industrial sector was growing more rapidly than total manufacturing activity between 1890 and the second Sino-Japanese War (Table 6.6).

The relatively impressive growth rates reported above are significant for strategic diagnosis. Recall that strategic confidence is defined as a function of both levels of activity per capita (accumulated success) and rates of change (success in the here and now). In this instance though, impressive rates of growth are as much about the depressed starting point circa 1890 as they are about the dissemination of a new strategic mix that touched the Chinese population at large. Further, staying with rates of growth, it is telling that a major support industry of industrialisation—modern transport and communications—grew far less quickly than modern manufacturing output. That implies that mechanised industrial activity may have been segmented from the mainstream of the economy. Naughton (2007, pp. 43–44) refers to "enclave industrialisation", which he saw as having distinct Manchurian and treaty port streams. These observations fit with the recognised dual nature of the economy from the middle 1800s, with the more modern and more traditional streams variously labelled as "core and peripheral" or "coastal and hinterland" (Fairbank 1978; Lin 2005; Skinner 1977). It also underscores the argument that the high cost of internal logistics was an important determinant in the ongoing competitiveness of local handicraft production deep into the 1930s (Feuerwerker 1980, pp. 15–16, and Footnote 2 above).

The final empirical observation on the state of Chinese industrialisation prior to the founding of the People's Republic is that the investment share of GDP, an indicator of the rate of capital deepening, a necessary process for the pursuit of economic growth driven by technological change, was just 5% in 1933 (Table 6.7), measured in 1933 prices. Using a deflator based on 1952 prices yields a slightly higher estimate of 7%. Neither estimate describes a rate of investment consistent with an economy embarking upon a concerted industrialisation effort. Indeed, such low investment rates would barely cover depreciation of the existing capital stock, let alone producing considerable annual net additions to the nation's productive capacity.

Finding a contemporary economy with a similarly low rate of capital formation is not easy. There are very few examples available. One can point to Ghana in the first half of the 1980s, where gross capital formation to GDP averaged 5.4% from 1980 to 1985, or Uganda in the second half of the same decade, where gross capital formation to GDP averaged 7.5% from 1984 to 1989. Ghana and Uganda were then, and still are, predominantly rural, overwhelmingly poor societies. That is not the sort of capital formation peer group that one associates with a society embarking on an industrialisation drive.[5]

Returning to China's *Strategy Grid* (Fig. 6.2), the period from 1929 to 1950 maps as an unmitigated disaster. China's share of world exports more than halved, from

[5]Data for this comparison was sourced from the IMF *World Economic Outlook* database, with calculations by the author.

above 2% in 1929 to around 1% in 1950. The distance between Chinese living standards and the frontier also increased further. This is, of course, textbook third-quadrant strategic exhaustion fare. What the *Strategy Grid* is communicating is that in the first half of the twentieth century China was still pursuing a strategic mix that was not fundamentally different, in aggregate, from the one that had been consistently unremunerative in terms of both international competitiveness and relative living standards for the entirety of the nineteenth. The modest increase in China's world export share between 1890 and 1913 was not a sign that a new externally focused strategy was emerging. In this regard, the high-level strategic analysis reaches a similar conclusion to the more detailed empirical work. China was still, in the main, a traditional economy in the first half of the twentieth century, and that status condemned the society to fall further behind those nations operating successful industrial strategies.

In conclusion, the idea that China embarked upon an industrialisation strategy prior to the founding of the People's Republic finds little empirical support, notwithstanding some impressive rates of growth in the modern manufacturing sector after 1890: on an "enclave" basis. These growth rates need to be considered within the context of the very low base from which expansion was occurring, the concentrated geographic nature of modern activity and the foreign influence on the aggregates.[6] Furthermore, the continuation of a dominant share for traditional activities in total economic activity highlights that a majority of the Chinese population could easily have been remained untouched by the modern sector in their daily lives.

The final empirical point that disallows the hypothesis of an earlier adoption of an industrialisation strategy is that the investment share was extremely low, at either 5% or 7% of GDP in 1933, depending upon the deflator used. Neither figure is high enough to indicate that a concerted effort to deepen the nation's modern capital stock was underway in the period between the taming of the warlords and the escalation of conflict with the Japanese.

The final theoretical point that disallows the hypothesis of an earlier adoption of an industrialisation strategy is that China's strategic scatter plot shows very clearly that its strategic mix remained fundamentally inadequate through the first half of the twentieth century, just as it had been in the nineteenth. The ongoing relative decline in Chinese living standards and in its share of world exports is exactly the kind of poor relative performance that one would expect to see from a traditional economy operating in an industrialised world.

[6]Maddison (1998, p. 50) reports that Chinese owned firms contributed 67% of value-added produced in factories in 1933, with foreign factories accounting for the remainder, 14.2% in Manchuria and 18.8% in China proper.

6.6 Industrialisation in the People's Republic: China under Mao

The foregoing sections of this chapter served to first exclude the period before 1890 as a realistic possibility for the launch of an industrialisation strategy (Sect. 6.4) and then to do likewise for the period between 1890 and the founding of the People's Republic (Sect. 6.5). This section is devoted to outlining the nature of the industrialisation strategy that did emerge under the leadership of the CCP from 1949, with, as ever, a focus on the DST properties of the strategies/sub-strategies in question. The concept of the anti-strategist—which in this context describes an autocrat imposing an anti-strategic model—will be invoked to explicate the Maoist tactics of continuous revolution, purge and self-criticism. While the basic contours of Chinese political-economic history between 1949 and 1978 are extremely familiar, this section is distinctive from the orthodox rendering of this period due to the application of the DST.

The increased availability of data from the early 1950s allows for a more detailed empirical discussion than was possible in the preceding sections.

To begin, consider the first row of Table 6.8, which details the high-level composition of Chinese economic activity in 1952, blending gross value-added and expenditure measures of GDP. The figures are calculations by the author using official National Bureau of Statistics data, which differ modestly from those in Tables 6.3 and 6.7. Regarding discrepancies between the official estimates and those of various scholars, Perkins (1975, p. 133) makes the pragmatic point that "One of the most striking features of China's post-1949 performance has been the marked increase in the rate of gross domestic capital formation. Although the precise figures vary depending on the prices used, there is no significant controversy surrounding the estimate that the rate of capital formation tripled between the 1930s and the 1950s". Similarly, from a DST perspective, it is the simple fact that there was a discontinuity in the proportion of China's income being allocated to capital formation that is pertinent, not the precise magnitude of such a shift. Abrupt movements such as these enunciate turning points in a society's strategic mix. The industrialisation push that accompanied the rise of the People's Republic is a clear illustration of this dynamic and the investment share of GDP is the best single indicator of that change.

In addition to the sharp rise in investment share, industrial production almost doubled its share of output from 1933 levels. The official data suggest a 17.6% share for "mining, manufacturing and utilities" in 1952. That compares to an 11.2% share for those sectors (including both modern and handicraft manufacturing) in 1933, as per Table 6.3. While this rate of increase falls short of tripling, as the investment share did, the directional signal is nonetheless abundantly clear. Naughton (2007, p. 55) argues that the economy was "wrenched" from its traditional footings and completely reoriented.

By proceeding as they did, the CCP leaders turned their backs on the bottom-up, comparative advantage following (Lin 2012, pp. 131–132), Pacific-facing "coastal

Table 6.8 Various indicators of Chinese industrialisation: 1952–1978

% GDP	Primary industry	Tertiary industry	Secondary industry	of which		Gross capital formation	of which	
	(ex-mining)			Mining, manufacturing, and utilities	Construction		Fixed	Change in inventories
1952	50.4	28.6	20.9	17.6	3.2	22.2	11.7	10.5
1957	40.3	30.1	29.7	25.4	4.3	25.4	17.0	8.4
1965	37.9	27.0	35.1	31.8	3.2	28.4	21.5	6.9
1972	32.9	24.1	43.1	39.3	3.7	32.2	25.3	6.9
1978	27.9	24.5	47.6	43.9	3.8	38.2	29.8	8.4

Sources to Table 6.8: Author's calculations from Chinese National Bureau of Statistics data extracted from the CEIC database

Table 6.9 The realised investment share in planning periods prior to 1978

Years	*Plan*	*Percent of GDP*
1953–1957	First	24.2
1958–1962	Second	30.8
1963–1965	Na	22.7
1966–1970	Third	26.3
1971–1975	Fourth	33.3

Source: Lin (2012, Table 4.2, p. 97)

enclave industrialisation" (Naughton 2007, pp. 43–44) of the interwar years, which functioned in a relative vacuum from the still dominant traditional economy. It was replaced with a top-down, inward-facing, "big push", comparative advantage defying (Lin 2012, p. 55) model strongly referencing the USSR, who was also its key ally, source of technology, and trading partner. A 5YP was instituted for 1953–57, designed "half in Moscow and half in Peking" (Naughton 2007, p. 66). The plan centred on 156 large industrial projects that were to be imported directly from the Soviet bloc (Cheremukhin et al. 2015, p. 20) and situated either inland or in the north-east where Soviet engineers rehabilitated abandoned Japanese capital stock in Manchuria for Chinese use. The physical transfer of technology was accompanied by the sharing of tacit knowledge via 6000 Soviet advisers (Naughton 2007, p. 66). The investment share of GDP across the 5YP periods prior to 1978 is detailed in Table 6.9.

It is notable that the efficiency of the top-down "big push" investment drive was poor, as signified by the fact that almost half of the gross increase in capital formation was attributable to inventory accumulation, which tied up a remarkable 10.5% of China's 1952 GDP in newly created stocks and a still high 8.4% in 1957 at the end of the first plan period. Clearly, the demand and supply sides of the economy were not expanding in perfect sympathy at this stage despite the fact it was still a genuinely mixed economy up to 1956. Even so, considerable achievements in terms of deepening capital stock, stimulating economic growth, and jolting the society onto a new strategic trajectory were recorded. Consequently, many scholars classify the first 5YP as, on balance, a successful plunge into modern industrialisation (Cheremukhin et al. 2015; Lardy 1987; Lin 2012; Lin et al. 2001; Naughton 2007; Perkins 2013). In terms of China's GDP per capita versus the frontier, it increased from 3.6% in 1950 to 4.5% in 1957.

The period of the first two plans (1953–1962) was a time of considerable instability in terms of the signals coming from the CCP leadership. In this, it was similar to the entirety of the pre-reform era. What was different about the period up to 1962 is that it was a time of genuine experimentation in terms of both the rural and the urban economies, with abrupt changes in policy direction coming literally within months of each other at times. Political conflict frequently arose between those leaders of a more pragmatic bent hoping to bring about industrialisation within the construct of a mixed economy and the absolutist, anti-strategic left, symbolised by Mao. Each change of direction was accompanied by a burst of energy embodied in a spike in the growth of investment (see Fig. 6.3), followed by periods of relative calm

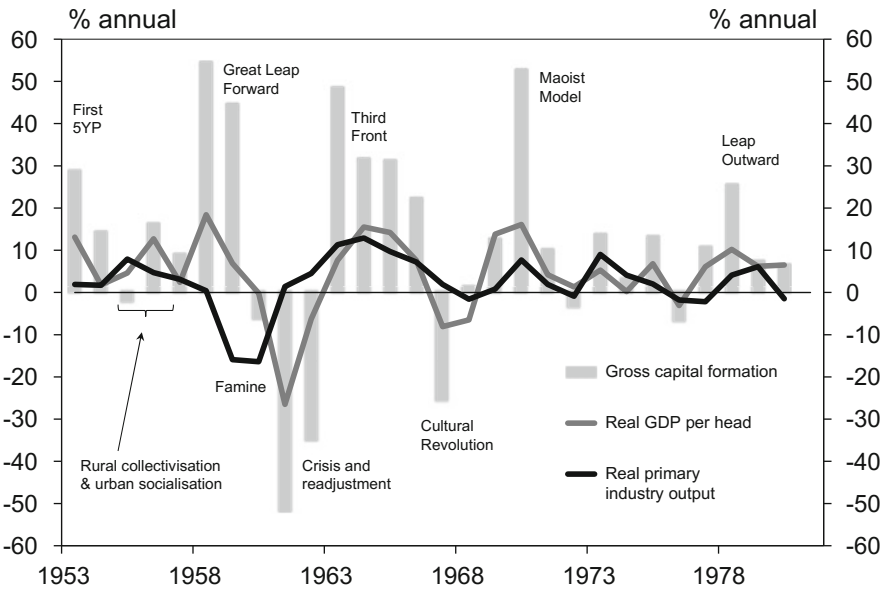


Fig. 6.3 Investment and growth phases from 1953 to 1980. Sources for Fig. 6.3: Underlying data from CEIC with calculations by the author. The annotations are based on Fig. 3.2 in Naughton (2007, p. 63)

(1954–1955, 1958) or calamitous contraction (1959–1962). Perkins (2013, p. 26) has argued that "Some scholars have attempted to discern an effective economic development strategy from Mao's writings and actions, but the evidence that he ever had a coherent one that had any chance of being effective is lacking".

Snooks (1997, pp. 482–483) is more directly damning, positioning Mao as the archetype of the modern anti-strategist, invoking continuous revolution to hobble successive generations of actual, potential, and imagined opponents, enforcing strict autarky and violently resisting the operation of competition and market forces, in all forms. Naughton (2007, p. 62) argues that the regime of political and social control in China under Mao was more restrictive than that operating in the USSR, despite the greater centralisation inherent in the Soviet economic model.

In Chap. 2, anti-strategic societies were defined as "those that choose to divorce themselves from the GST, thereby shielding themselves from both external competition and unfettered price signals". Additionally, it was argued that anti-strategic societies "are candidates for destructively high inflation from incoherent policy frameworks; or static/falling prices derivative of weak or falling productivity growth accommodated by an absence of competitive pressures. Or they may swing from one to the other as the elite attempts to steer the dynamic engine of society with the clumsy tools of fiat". These points ring true in Mao's China, with rapid advance followed swiftly by severe contractions, with political ideology continuously trumping economic logic.

Mao's first anti-strategic strike as China's leader occurred in 1953 when the state established a compulsory grain procurement monopsony (Lin 2012, p. 81; Naughton 2007, p. 60), which set quotas that transacted at fixed low prices, and an urban–rural household registration system designed to aid the maintenance of the distorted inter-sectoral terms-of-trade that were required to finance heavy industrialisation in urban areas (Lin 2012, p. 85). Compulsory grain procurement lasted for another 30 years, while the *hukou* household registration system persists, albeit somewhat diluted, as of the time of writing. The CCP also exerted social control through a strictly hierarchical personnel system (McGregor 2010). These institutional constructs were part of a rent-seeking[7] apparatus that succeeded in redistributing the surplus produced by rural households into profits for the SOEs, which constituted the bulk of public revenue. By the middle of the 1950s, so effective was this inter-sectoral transfer arrangement that the government's annual resources amounted to approximately one-quarter of GDP, an enviable figure for a low-income economy (Naughton 2007, p. 60).

The frenetic investment activity of 1953, the first year of the initial plan, had a sharp inflationary effect. It was therefore necessary to curtail investment growth in 1954 and 1955. Slower spending on heavy industrial expansion reduced the scale at which resources were being sucked into the vortex of the planned economy, while household farms continued to dominate agriculture. Private urban businesses still existed on some scale, although pressure was being exerted to bring their operations under the state procurement umbrella (Naughton 2007, pp. 66–67).

Mao launched his next anti-strategic salvo, known as the "high tide of socialism" (Naughton 2007), at the vestiges of the mixed economy, across 1955 and 1956. In rural areas, Mao personally instigated a mass campaign to collectivise agriculture in the winter of 1955. Mao openly accused local cadres of timidity in the execution of socialist rural policies. Faced with such pointed criticism, the response from the CCP rank and file was dramatic. At the end of 1952, just 2% of farm households were enrolled in collectives. At the end of 1955, 14% were enrolled. At the end of 1956, the proportion had increased to 98% (Naughton 2007). This in effect reversed the substantial redistribution of land in favour of the peasantry forced through from 1949 to 1952. This overturned a longstanding policy of the CCP that was central to gaining rural support for the Party in its struggle with the warlords, the gentry, the Japanese and the Nationalists (see discussion in the previous chapter). It was summarily dispensed with when it no longer suited Mao's purpose. Simultaneously, the socialisation of private urban assets was abruptly imposed. The "high tide of socialism" took the mixed economy of 1954 and transformed it into a superficial replica of the Soviet model in under 2 years.

[7] Or "rent hedging" in the case of the *hukou* system, as spatial controls on labour were essential for maintaining full employment in urban areas due to the dubious viability of the comparative advantage defying heavy industrial sub-strategy. See the discussion of the rent hedging concept within the broader context of Tullockian theory in Kyngdon (2014, p. 89).

Agricultural collectivisation did not immediately lead to contracting farm output, as it had in the USSR (Lin 2012, pp. 82–83; Naughton 2007, p. 68), due to the benefits of economies of scale in animal power and other non-labour inputs realised in the initial movement. However, the removal of a household's right to exit a collective, imposed by the National People's Congress of 1956 (Lin 2012, pp. 94–95) removed a vital incentive mechanism for farmers, whether they were ex ante shirkers or ex ante hard workers (Chen 2022, Chapters 11–13).

The dramatic advance towards the installation of the interwar Soviet model encountered a hurdle in February of 1956, when Khrushchev denounced Stalin, who had died 3 years earlier, in a speech to the Soviet Party leadership. In China, the immediate response was a return to gradualism, checking the "reckless advance" of the prior year (Naughton 2007, p. 68). The eighth CCP congress, held in September 1956, put forward a programme of economic moderation. By early 1957, a more liberal political and economic discourse had emerged, poetically entitled the "Hundred Flowers", which created the possibility that the pragmatists could push for a more market-oriented socialism—a mixed economy—rather than continuing to move towards the pervasive planning that defined the Soviet model (Naughton 2007).

Advocating for a consolidation in the pace of change was clearly a sensible position to take at this time. The first plan was very successful in terms of embedding industrialisation, through deepening the capital stock, achieving technology transfer, revitalising education, and producing rapid growth in output. Bedding down those initial gains with a period of moderation was the obvious tactic to pursue at this point. Unfortunately, that is not how Mao, the arch anti-strategist, thought. Mao's response to the perceived threat that the prospective liberalism embodied in the "Hundred Flowers" movement posed to him politically was to swiftly launch an aggressive "Anti-Rightists" campaign. The campaign began in mid-1957, less than a year after the eighth CCP congress had formalised the pursuit of a more moderate rate of change. The primary targets of the "Anti-Rightists" campaign were intellectuals operating outside the CCP membership. They were removed from their jobs, arrested, and imprisoned. The number purged in this fashion numbered around 800,000 (Naughton 2007, p. 69). With his political opponents accordingly disempowered and off-balance, Mao proceeded to launch his greatest and most damaging anti-strategic policy, which pushed the Chinese system closer to the complete absence of market signals that the anti-strategist seeks. This was, of course, the "Great Leap Forward", which ultimately contributed to the colossal human disaster of the Great Famine (see Fig. 6.3) setting Chinese society back for many years.

Naughton (2007, p. 69) describes the Great Leap Forward as the "most dramatic, peculiar and ultimately tragic period in the history of the PRC". It was Mao's repudiation of gradualism in the movement to all-encompassing communism. It was characterised by an infatuation with economic growth, but contrary to the Soviet model, it featured microscopic decentralisation, all the way down to the infamous backyard steel mills. The Great Leap Forward required a stepwise increase in the redistribution of income between sectors via the distorted rural–urban terms-of-

trade. To this end, all markets in rural areas were shut down, enforcing the procurement monopsony and destroying any observable price signal that may have emanated from the vestiges of the commercial system. In the urban economy, material rewards and incentive systems were ceased in SOEs. Emboldened by a rich autumn harvest in 1958, and encouraged by strong early returns vis-à-vis heavy industry, the leadership pushed ahead even more aggressively. As the air of ideological triumphalism became increasingly extreme, the veracity of the economic information reaching the leadership quickly deteriorated (Naughton 2007, pp. 69–70).[8]

The exuberance of 1958 was destined to be short lived. A decision was made at this time to further accelerate the rural–urban income transfer. It was decided that planners would *reduce* the availability of inputs to agriculture while simultaneously *raising* procurement quotas. This was anti-strategic rent-seeking on a mind-boggling scale. It was egregiously inconsistent with basic resource constraints. It led, predictably, to economic collapse. In the summer of 1959, when food shortages began to emerge and corrective measures to ameliorate some of the damage may have still been possible (Naughton 2007, p. 71), Mao re-launched the "Anti-Rightists" agenda, silencing anyone brave enough to voice their concerns or to point out the obvious. Rather than allow reality to impinge upon his politics, Mao and his coterie drove the nation into a disastrous famine and an economic depression (Fig. 6.3). Alarmed at the incoherent direction taken by Chinese policy, the USSR withdrew its advisers in 1960, which led to a political schism and a cessation of trade between the two countries, pushing China further towards pure autarky. By the end of 1962, the gains that China had made in terms of relative GDP per capita over the course of the first 5YP had all been erased.

There was no formal plan in place in the years 1963–1965. It was instead a period of adjustment and repair, with the economy and the social system still reeling from the trauma of famine and the disaster of the "Great Leap". Rural markets were reintroduced on a small scale; agricultural collectives were reduced in size; incentives were reintroduced in the SOEs; fixed investment was reduced sharply (see Table 6.9) and millions of workers who had been absorbed into the urban economy were sent back to the countryside (Naughton 2007, pp. 72–73). With economic activity stabilising, work began on a new plan. Once again, confronted with an economy that was showing signs of improvement as it deviated from ultra-leftist principles, Mao struck with another major anti-strategic initiative, this time labelled "The Third Front".

The Third Front was an attempt to turn the interior provinces of China into an alternative industrial base that could be retreated to for national security purposes. This was an enormous undertaking which in effect called for the duplication of the existing capital stock situated in the coastal and north-eastern provinces. There was a degree of logic to this idea if viewed solely through the narrow lens of national security. Two historical lessons may have also contributed to Mao's thinking. The

[8] A tragi-comic description of the grassroots process of falsifying crop statistics in this era is contained in Chen (2022, Chap. 13).

memory of the loss of industrial capability when the Japanese advance pushed the KMT inland to Chongqing was no doubt still fresh in the minds of first-generation revolutionaries in the CCP (see discussion in Chap. 5). Second, Russia's fabled industrial retreat east of the Urals in the early 1940s may have served as an inspiration. Whatever the precise motivation or historical antecedents, from an economic point of view it was wasteful, raising already high logistics costs (Lin 2012, p. 100) and defying the respective comparative advantage of the land- and resource-rich interior provinces, and the coastal provinces themselves. Wasteful or not, economic growth returned in the middle years of the 1960s on the back of this renewed investment drive (Fig. 6.3) and China again began making modest progress in terms of relative GDP per capita. However, like every previous period of apparent promise since the CCP had ascended to power, it was soon hijacked by an ultra-leftist anti-strategic move. This time Mao labelled it the "Cultural Revolution".

Launched in the late summer of 1966, this phase of radical politics sits comfortably within Mao's anti-strategic ideology of continuous revolution and pre-emptive strikes aimed at actual and perceived threats. Mao encouraged "Red Guards" of communist youths to denigrate their seniors in the CCP, forcibly remove them from their positions, and exile them to the countryside. Intellectuals were again targeted, as were the pragmatists among the leadership, including Deng Xiaoping (Naughton 2007, p. 75). The economy contracted in 1967 and output did not return to the 1966 level until 1969, suggesting that politics impeded growth in a material way through this phase (Perkins 1975, p. 132). While this period was not as catastrophic for Chinese society as the Great Leap Forward, it came with very real human and economic costs, including the considerable loss of productivity and human capital as students, scholars, and other white-collar workers were sent to the countryside instead of attending university or using their skills to best advantage in the urban division of labour. For the household sector as a whole, real wages stagnated, and retail prices were modestly deflationary between 1963 and 1971 (Perkins 1975, Table 7, p. 136).

Mao pushed forward with Third Front-related activities in 1970. With the pragmatists once again sidelined, Mao moved to crush the incentives systems and market functions that had been re-instated as part of the institutional reconstruction that followed the Great Leap Forward (Naughton 2007, p. 76). A similarity with the failed earlier Maoist model was decentralisation. A core difference was that rather than attempting to simultaneously achieve rapid growth across the rural and urban economies, this time household austerity was enshrined as a central tenet of the investment drive (Naughton 2007). Another major difference was that the military had become a major force in civil affairs. Having been required to quell some of the factional brawling that characterised the chaos of the Cultural Revolution, the army had not retired in the aftermath. Rising anxiety in relation to the perceived threat of Soviet military action, and unease with the American presence in nearby Vietnam, further cemented the power of the army, led by Lin Biao and his faction, in the civilian decision-making process (Naughton 2007, pp. 75–77).

Growth was strong across both investment and primary industry in 1970 but the unbalanced expansion, operating without a rudder in terms of market signals, soon

ran into trouble. There was a poor harvest in 1972 (Perkins 1975, p. 136) with primary industry output declining in absolute terms, which limited the transferable surplus available for the investment drive. Furthermore, the large share of factor inputs being allocated to construction proper left upstream support industries undersupplied with both labour and capital (Naughton 2007, pp. 76–77), a self-limiting situation. With the economy again on shaky ground in the second half of 1971, Mao grew anxious at Lin Biao's growing influence, and Lin was purged. Mao then surprisingly engaged in a diplomatic rapprochement with the West, with a visit by Australian opposition leader Whitlam in June–July of 1971 (where wheat imports were a major topic of discussion) followed by US President Nixon's historic visit in February 1972.

With Lin's untimely demise and Mao's own failing health, the moderate elements in the top leadership were able to restructure some of the least efficient aspects of the investment push from 1972 to 1975 (Naughton 2007, p. 77), while cautiously increasing international engagement. Critically, Deng Xiaoping, a political casualty of the Cultural Revolution, was rehabilitated in late 1974 as Premier Zhou Enlai ailed, supposedly to lead an economic rationalisation. However, the anti-strategic absolutist left continued to struggle against the dying of the light, with the "Gang of Four" wielding the delegated authority of a fading Mao to keep the reformers off-balance. They were able to oust Deng in early 1976, after Zhou Enlai's passing and prior to Mao's death in September of that year. However, when the members of the "Gang of Four" were themselves purged that October, Deng was again returned and placed in a troika of senior positions on the Central Committee, the Central Military Commission, and in the People's Liberation Army.

Deng's return to the centre of CCP decision-making marked the end of a three-decade period where Chinese society exhibited an overt anti-strategic posture. That cleared the way for a genuine engagement with the industrial GST from 1978. Before moving on to discuss this monumental kink in society's material fortunes, the *Strategy Grid* for the period from 1952 to 1978 (Fig. 6.4) must be considered.

After the intuitively disastrous third-quadrant outcome of the 1952–1961 vector, the scatter shows a zig-zag pattern through the 1960s and 1970s that is entirely consistent with the idea of an economy being repeatedly buffeted by anti-strategic lurches, followed by periods of consolidation and modest recovery. The autarky of the period can be seen in the rounding-error-sized changes in export share between the early 1960s and the late 1970s. The general impression on the GDP per capita axis is of chaotic energy exerted almost for naught, with every phase of progress on the horizontal axis shadowed by a period of regress. The phrase "almost for naught" reflects the fact that the Chinese people were marginally wealthier in a relative sense in 1978 than in 1952, when the first 5YP was launched. If Mao had lived for another decade, the outcome may well have been very different. The archetype of the modern anti-strategist would have been sorely tempted to impose, yet again, a chaotic political overlay that would have derailed and then undone any improvement in the economy that relied, however, slightly, on a "rightist" material feedback system of incentives. Put another way, Mao would never have countenanced allowing the

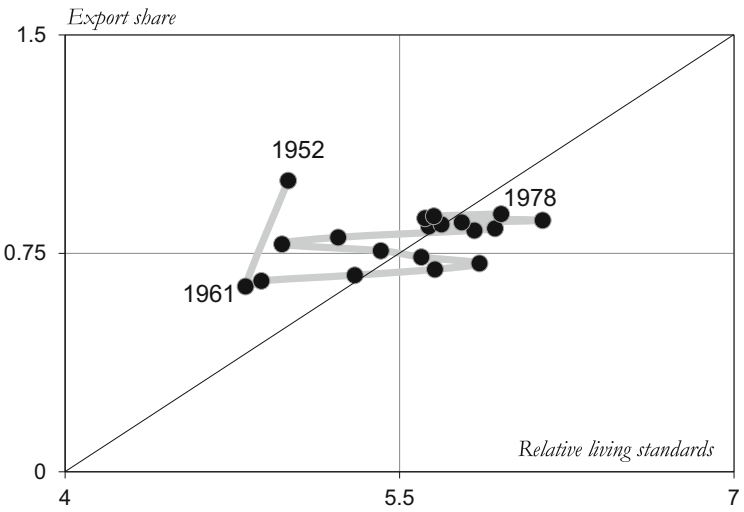


Fig. 6.4 China's anti-strategic pathway: 1952–1978. Sources for Fig. 6.4: GDP per capita and export share in 1950 comes from Maddison (2009), with calculations by the author. The export shares from 1961 forward are from the World Bank's *World Development Indicators* database, with calculations by the author

dynamics of the strategic accelerator to operate freely and openly, and would have done whatever it took to destroy it.

6.7 Conclusions

The chapter had one macro-objective and a number of micro-objectives. The macro-objective was to serve as a bridge between the discussion of traditional China presented in Chap. 5 and the systematic examination of the successes of the reform era and the assessment of China's longer-run prospects that follow. The first micro-objective was to reach a judgement on the timing of China's entry into industrialisation, within the context of a broad overview of economic developments from the late Qing to the death of Mao. The second was to highlight the timing and nature of the multiple strategic and *anti*-strategic kinks over time prior to the onset of the reform era in 1978.

The first key result put forward was that the traditional economy was gauged to remain dominant right up to the early years of the People's Republic. Ergo, the inception of a society-wide industrialisation strategy cannot credibly be dated any earlier. The second key result was that while launching and deepening industrialisation was clearly a major focus of the policies pursued by the CCP leadership from 1949 to 1978, the framework was in reality anti-strategic. As the Maoist model systematically eschewed outward engagement, competition and the

use of market-based price signals to guide decision-making, it clearly identified as anti-strategic. Shutting down these signalling mechanisms is the very definition of anti-strategic behaviour. Pursuing these ends required the construction of an internal rent-seeking apparatus that redistributed income away from the rural majority through distortionary institutions, while defying the society's comparative advantages. Furthermore, Mao's anti-strategic policy salvoes continuously derailed the economy, prohibiting it from gaining momentum. Uncertainty prevailed and confidence was scarce.

The pervasive uncertainty and individual insecurity that these policies produced were inimical to sustained economic growth and its concomitants, widespread individual gains and society-wide success. The result was that despite periods of promise, China was no further advanced in terms of relative living standards in 1978 than it was in 1952. The Chinese people, particularly the rural majority, suffered from a range of deprivations brought about by the incoherent policies begat by the anti-strategic belief that political ideology could triumph over economic (strategic) logic. The Chinese people deserved much, much better. With the ascent of Deng, they were about to get it.

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Chapter 7
China's Strategic Pathway from Deng Xiaoping to Xi Jinping

7.1 Introduction

This chapter will trace the contours of China's remarkably successful turn towards an outward-oriented industrialisation strategy from 1978 up to the start of the first leadership term of Xi Jinping. The spectacular outpouring of economic growth that has occurred in China since the 1978 kink in its strategic approach represents arguably the most impressive and sustained increase in society-wide living standards ever achieved by an already large economy over a multi-decade period.

The first task of this chapter is to analyse the economy's initial move to engage with the industrial GST from 1978, involving parallel reforms in the domestic economy and in the traded sector (McKay and Song 2012b, 2013). This is a continuation of the narrative history of Chinese society presented in Chaps. 5 and 6, conducted as ever within the confines of the DST and illustrated via the *Strategy Grid*. China has spent the majority of the post-1978 period in the highly desirable first quadrant of the latter, with its domestic economy growing much faster than the frontier and its export market share increasing consistently. Even so, this period featured moments of profound strategic uncertainty, as the economy's pattern of progress was far from linear. China's strategic leadership was accordingly presented with some major challenges along the way, not all of which were immediately handled with aplomb.

The second section will focus more narrowly on China's international engagement since 1978. It will be demonstrated that the dynamic substitution effect [see McKay and Song (2010) and the discussion in Chaps. 3 and 4] that has characterised the strategic pathway of other successful, outwardly-oriented latecomer industrialisers is also highly evident in China, although it is as yet far from mature.

The chapter will conclude by putting forward the idea that China's next strategic kink would ideally take it closer to the border of the first and fourth quadrants, implying a greater reliance on domestic demand than previously, while still retaining a semblance of balance by continuing to achieve modest gains in export market share

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from an already elevated position. That position is robust—and is partially independent of the discussion of Great Power rivalry that is introduced in the following chapter as the narrative moves forward to the Xi era. In the longer run, a phase where Chinese strategy takes it into the fourth quadrant is entirely likely. That would reflect the fact that a mega-*state* has no choice in the long run but to "make room for itself" by becoming a mega-*market* (McKay and Song 2010, pp. 11–12)—and adopting complementary institutional changes to produce a political-economic setting that is accommodative of this transition. It is the success or failure—either through skill or disengagement—of this wider strategic enterprise that will principally determine whether or not China will be able to reach the status in the world-system that it seeks (World Bank and Development Research Center of the State Council 2012; Xinhua News 2021).

7.2 The Reform and Opening-Up: The Initial Foray, 1978–1985

The Third Plenum of the 11th Central Committee of the CCP (hereafter the "Third Plenum") is rightly celebrated as a major turning point in both Chinese and global history (Garnaut 2001; Lardy 1998; Lin 2012; Naughton 2007). The Third Plenum, which concluded on the winter solstice of 1978, is the proximate moment when China's strategic leadership chose to engage with the industrial GST, turning towards the market and away from the autarky and anti-strategic incoherence experienced over the first three decades of the People's Republic. A pragmatic strategy of outward-oriented industrialisation gradually developed, which would both follow China's comparative advantage more closely (Garnaut and Huang 2001; Lin 2012; Song 1996) and selectively embrace market-based incentives (Huang 2001; Lardy 1998; Lin 2012; Song et al. 2005). Garnaut (2001, p. 2) put it well when he stated that "After the 1978 Plenum there was acceptance that domestic and international exchange through markets was a necessary and acceptable component of a national development strategy. . .Since December 1978, there has been no turning back". The Chinese approach can be summarised as gradualism paired with pragmatism. Two well-known and oft-repeated phrases popularly attributed to Deng Xiaoping encapsulate the basic approach of the reform era. Gradualism was embodied in the phrase "crossing the river by feeling the stones", which allowed for a dual-track economy, or the parallel co-existence of planned and market-based activities, with reforms pursued cautiously and in due sequence. Pragmatism was enshrined in the sentiment that "it doesn't matter whether the cat is black or white, as long as it catches mice".

In the area of rural reform, from 1978 to 1983 incentive structures in agriculture were tilted back in a market-oriented direction via an increase in state procurement prices for above-quota output; a steep reduction in the size of work units through the introduction of the household responsibility system; the re-establishment of

commercial marketing of farm output; while the supply of factor inputs such as fertiliser increased materially (Lin 2001, p. 137). The result was a very impressive uplift in agricultural production, with annual growth rates averaging 7.7 percent from 1978 to 1984, substantially above the 2.9 percent pace of the 1952–1978 era (Lin 2001, Table 1, p. 138). After decades of being forced to subsidise urban development through an artificial rural–urban terms-of-trade, these pricing reforms turned the terms-of-trade back in the farmers' favour—for a time. From the point of view of above-quota grain, this effect was relatively short-lived, but in the market sector, the rural–urban terms-of-trade were 35.2 percent higher in 1987 than in 1979 (Lin 2001, Table 2, p. 139).

It is important to note that the household responsibility system was a private innovation in a village in Anhui that was disseminated widely once it proved to be successful. It was not a policy masterstroke emanating from the central leadership (Lin 2012, pp. 155–156). Indeed, while the Third Plenum codified the principle of scaling down production teams, a unitary household model was still prohibited at this stage (Lin 2012). The technically illegal innovation in Anhui soon attracted positive central administrative attention. Initially, the experiment was extended only to the poorest households, such that by the end of 1980 only 14 percent of the nation's production teams were involved. The success of this experiment was so remarkable that the system was quickly introduced across the rest of the country, with 45 percent of teams engaged at the end of 1982 and 99 percent by the end of 1984 (Lin 2012).

The strength of the farm production impulse that emerged with the advent of an improved constellation of incentives is an excellent example of the DST in action. Chinese rural households responded enthusiastically to the signals they observed, generating a high positive multiplier effect on the ground from the central edicts. The combination of a stronger incentive to produce (higher procurement prices); improved flows of information (commercial marketing) and an ability to benefit directly from a lift in revenue (unitary households as beneficial entities) was a powerful combination that successfully triggered the positive dynamics inherent in the *Strategic Alternator*. Households now had the incentive to forego consumption to purchase productive fixed assets and intermediate inputs, and possibly even to borrow for such purposes. Households also now had the incentive to forego leisure to provide more labour input to the production process than would have been rational under the old collective arrangements.

Lin (2001) quantified the impact of this shift in incentives by econometrically decomposing the uplift in agricultural production between 1978 and 1984. Lin's estimates ascribed roughly one-half of the increase in output to higher total factor productivity, with the vast majority of this increase attributed to the household responsibility system. The second largest contributor to higher output was increasing inputs of fertiliser, which explained one-third of the total gain (Lin 2001, Table 6, p. 148). Lin's widely cited empirical findings are consistent with the arguments put forward above that highlight the importance of the changing constellation of incentives presented to Chinese farmers early in the reform era.

Turning now to the urban economy, the small-scale services sector, which had been heavily suppressed prior to 1978, had a number of prior strictures removed (or ignored in practice by the authorities), which catalysed a major uplift in urban employment opportunities (Perkins 2001, pp. 40–41). There were few practical barriers to entry in small-scale services and budding entrepreneurs were quick to respond to the new possibilities. The term "floating population" was coined in this period as rural residents moved in large numbers to the cities to fill the new positions and start their own businesses, many of them having been "liberated" by the aforementioned lift in agricultural productivity. Perkins (2001) notes that before 1978, such internal migrants were ineligible for food rations in the cities and would have been quickly "deported" back to the countryside by the security apparatus. By the middle of the 1980s though, they could purchase essentials in commercial markets or from the new wave of small-scale shops and they were left relatively unmolested by officialdom. Here again the mechanics of the *Strategic Alternator* are clear, with market-based signals attracting plentiful factors of production, with the income generated thereby proceeding to compound in virtuous fashion as confidence built from period to period. With plan allocations fixed in absolute terms from 1984, the proportion of productive inputs available to private entrepreneurial activity through market allocation increased significantly over the course of the 1980s, complementing the forces released by the deregulation of small enterprises.

Township and village enterprises (TVEs) also emerged as a dynamic response to strategic demand in this era (Song et al. 2005) with Naughton (2007, p. 271) labelling the period from 1978 to 1996 as their "golden era". TVEs were collectively owned rural enterprises that sprang from within the commune system. A major catalyst for their growth was the abolition of the state procurement monopsony and the re-opening of rural markets, which allowed communities to retain more of their raw production and to process it themselves, much as the traditional handicraft sector had done prior to the rise of command planning (Naughton 2007, p. 274). TVEs had a distinct competitive advantage over the cumbersome SOE sector, with labour-intensive productive techniques married to low relative labour costs (Naughton 2007, p. 276) and they quickly gained market share at the expense of their larger, longer-established competitors. The *Strategic Alternator* was again at work.

Larger enterprises in the industrial and services sectors were less nimble than farm households, TVEs and small-scale entrepreneurs, and they accordingly grew less quickly in response to the new strategic opportunities, despite a range of reforms. Greater managerial autonomy through profit retention was instituted widely in 1979–1980 (Lardy 1998, pp. 22–23). That was followed by a systematic effort to deepen SOE reform in 1984 (Geng et al. 2009; Perkins 2001, p. 45) based on a contract system between enterprise management and their responsible public authorities (Lardy 1998; Song et al. 2005). While these initiatives increased the marketisation of the SOE sector, the dual price system that subsequently emerged proved to be a bonanza for insiders, rather than a major step towards commercial decision-making and hard budget constraints. With market-determined prices often considerably higher than state-controlled prices, rent-seeking arbitrage behaviour

was extremely lucrative (Lardy 1998, p. 23; Lin 2012, pp. 194–195; Perkins 2001, p. 45). It also led directly to allocative inefficiencies while simultaneously fuelling mass social discontent.

Table 7.1 presents selected indicators of Chinese industrialisation in the same manner as in Table 6.8 in the preceding chapter. The rural and service sector reforms saw the former hold its ground as a share of GDP between 1978 and 1985, while the latter saw a considerable increase of almost five percentage points. The share of secondary industry accordingly fell, reflecting both the rapid growth occurring elsewhere and sluggish outcomes in heavy industry, whose share of the economy was abnormally high at the outset of the period. Interestingly though, the increased marketisation of the economy had not yet made much progress in terms of matching supply and demand at the aggregate level, with the change in inventories still accounting for a very high 8.6% of GDP in 1985, which was even higher than the level of 1978.

The final major elements of the early reform were related to the external (Lardy 1992) and financial (Huang 2001; Lardy 1998) sectors. Prior to 1976, foreign commerce, such as it was, was monopolised by a small number of centrally controlled, state-owned trading companies. In the early 1970s, at the height of the Third Front drive for self-sufficiency (see discussion in Chap. 6), the international trade share of GDP was just 5% (Naughton 2007, p. 379). Reforms enacted soon after Mao's death allowed firms to import in their own right, and in Perkins' (2001, p. 42) words they "responded with such alacrity that China by 1978 found itself with a growing trade deficit, despite increasing prices for China's petroleum exports". The response was to allow for both the export of manufactures and inward FDI from 1979 (Perkins 2001). Regionally based trading firms emerged and export promotion policies in the form of processing zones in Fujian and Guangdong were introduced, ahead of a more comprehensive policy in 1984, and exchange rate devaluation was pursued (Lardy 1992; Naughton 2007). Extremely rapid growth in international trade ensued. The export share of GDP increased from 4.8% in 1978 to 8.9% in 1985. A detailed examination of China's international engagement is undertaken in Sections 7.4 and 7.5.

In the financial sphere, immediately prior to reform the financial system consisted of three banks and a network of credit cooperatives. The People's Bank of China was the dominant entity, the Bank of China was its subordinate, and the Construction Bank was responsible to the Finance Ministry (Lardy 1998, p. 61). The Agricultural Bank of China was established in 1979, while the Bank of China and Construction Bank were both granted independence from their parents around this time. Then in 1983, in tandem with the cessation of budgetary appropriations for SOEs, the People's Bank was designated as the central bank and monetary authority, and a new institution, the Industrial and Commercial Bank of China, was established to assume the People's Bank's deposit-taking and lending activities through its branch network (Huang 2001; Lardy 1998, p. 64). Collectively, the embryonic commercial banking system was tasked with SOE financing (Lin 2012, p. 209; Shih 2008, p. 38)

Table 7.1 Various indicators of Chinese industrialisation: 1978–1995

% GDP	Primary industry	Tertiary industry	Secondary industry	of which		Gross capital formation	of which	
	(ex mining)			Mining, manufacturing, and utilities	Construction		Fixed	Change in inventories
1978	27.9	24.5	47.6	43.9	3.8	38.2	29.8	8.4
1980	29.9	22.2	47.9	43.8	4.3	34.8	28.7	6.1
1985	28.1	29.3	42.6	38.1	4.6	39.0	30.4	8.6
1990	26.7	32.4	40.9	36.4	4.6	34.0	23.9	10.1
1995	19.7	33.7	46.7	40.7	6.1	39.3	32.8	6.5

Sources to Table 7.1: Author's calculations from Chinese National Bureau of Statistics data extracted from the CEIC database

while the People's Bank was to serve as the monetary and regulatory authority for the system, a role it developed only gradually (Lardy 1998, pp. 63–64).[1]

Within the confines of the *Strategy Grid* the period from 1978 to 1985 comes across as a successful entry into outward-oriented industrialisation, underpinned by the parallel reforms of domestic real economy and financial policies alongside greater openness to international engagement. Figure 7.1a shows that China was moving through the highly desirable first quadrant in this phase, exhibiting a balanced strategy running almost parallel to the 45-degree line from a starting point indicative of the closed nature of the pre-reform economy. In terms of relative living standards, China made consistent progress on the horizontal axis throughout the period.

Taking advantage of increased data availability relative to earlier phases, Fig. 7.1b depicts China's IVA focussed *Grid*. On a point-to-point basis over the entire period, the inferences are similar to the export *Grid*, implying a successful first-quadrant strategy. However, the impact of rapid growth outside of the manufacturing sector from 1978 to 1982, as a consequence of the success of small-scale service sector reforms and the household responsible system in agriculture, is visually striking. Secondly, the heavy industrial bias of the pre-reform economy is illustrated by the higher starting point for the IVA schedule vis-à-vis the export equivalent. That higher starting point allows the IVA schedule to imply literal as well as relative balance by hugging the 45-degree line rather than running parallel to it.

7.3 Macro Instability and Strategic Uncertainty: 1985–1992

The macroeconomic stability of the first half of the 1980s, which had progressively engendered confidence in the dual-track reform agenda, was short lived. Inflation soon began to rise, generated by an ill-disciplined expansion of credit by the newly formed banking system (Garnaut and Ma 2001; Shih 2008). In tandem with the mass urban discontent generated by the inequality and perceived corruption associated with the "bonanza for insiders" described in Sect. 7.2, a volatile socio-economic-political climate emerged in the late 1980s. It also created a dangerous movement back towards an anti-strategic approach from the CCP leadership in response to the Tiananmen Square protests of 1989. Thankfully the conservatives were eventually sidelined by Deng's highly visible renewal of commitment to the industrial GST in 1992, which meant the risk of an anti-strategic lurch proved to be temporary. To paraphrase Garnaut (2001, p. 2) there was no *sustained* turning back after the Third Plenum. There were, however, some very anxious moments during the Tiananmen

[1] As an aside, China's four largest commercial banks, as listed in the text, are also the world's largest in terms of assets at the time of writing.

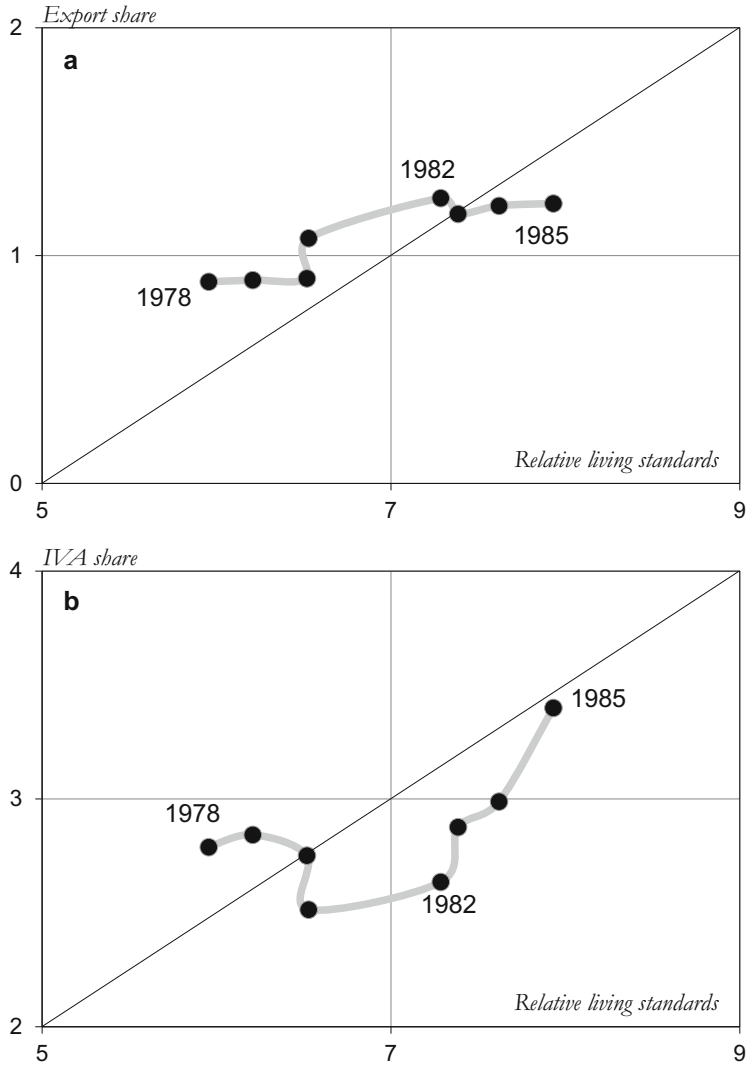

Fig. 7.1 (**a**) China's Export Strategy Grid: 1978–1985. (**b**) China's Industrial Value-Added Strategy Grid: 1978–1985. Sources for this figure: GDP per capita comes from Maddison (2009). The export and IVA shares are from the World Bank's *World Development Indicators database*, with calculations by the author

interregnum, when it was far from clear what the next kink in China's strategic pathway would be.

The most important individual leader in the 1980s was, of course, Deng Xiaoping, who controlled the dominant generalist faction in the CCP from the time of his success in easing out Hua Guofeng at the Third Plenum (Shih 2008, pp. 88–91). In addition to Deng, Chen Yun (a revolutionary leader who was also the

doyen of the CCP's economic experts) and Zhao Zhiyang (Premier from 1980 to 1987 and General Secretary from 1987 up to the Tiananmen incident) were both notable contributors to top-level policy-making—and elite politicking—in the 1980s (Naughton 2007, p. 91; Shih 2008, pp. 90–91).

As Premier, Zhao had day-to-day responsibility for economic management. However, his executive "power-to-do" was limited by the superordinate presence of Deng and his faction, as well as that of the influential Chen Yun and his faction, not to mention those of other active CCP grandees. This check on his power led, unavoidably, to a consensus style of policy-making (Naughton 2007, p. 91) that paid heed to a variety of interests, seeking compromise positions.

Seeking to distil the political-economic dynamics of the time, Shih (2008, pp. 58–63) puts forward a factional model. This framework seeks to explain the interaction between economic policy-making and macroeconomic (in)stability in the reform era. In the 1980s, in particular, Deng's faction is stylised as a decentralising, economically expansionary force. Chen Yun's faction is stylised as a technocratic, centralising, moderating economic force. Shih describes their competition as a process that generated abrupt shifts in monetary policy, credit supply, and inflation as the pendulum of power swung first to one and then to the other. In this view of the world, the efficient commercial allocation of capital was non-existent, with the banking system serving as a utility that supplied flows of patronage.

Supporting this characterisation of non-commercial credit allocation, Perkins (2001, p. 49) describes a process whereby lending decisions in the 1980s worked in reverse of traditional practice in a capitalist economy. First, the SOEs would determine their credit needs. Second, the central bank would enlarge the monetary base to accommodate this requirement. Lastly, the commercial banks would be expected to produce the funds from their deposit bases, with the loans tendered at low, administratively determined interest rates, and "in some cases, without much expectation of repayment" (Perkins 2001). Under such circumstances, there was no incentive for SOEs to be frugal in their demands. This was particularly so given the fact that once they had deployed funds on their own investment needs, there were profits there for the taking by on-lending in the shadow market, where high unregulated interest rates created a hugely attractive arbitrage opportunity for those with preferential access to the formal banking system (Lin 2012, pp. 194–195).[2]

Shih's model, which is supported by a detailed narrative account of elite politics in the 1980s and 1990s, fits the broad contours of the data. Inflation began to climb along with bank lending growth from 1985 (Shih 2008, pp. 110–111). After averaging 2.3% from 1981 to 1984, consumer prices increased by 9.3% in 1985, 6.5% in 1986, 7.3% in 1987, and then 18.8% and 18.0% in 1988 and 1989, respectively (figures from the CEIC database). While the economy continued to grow in real terms in the early years of the inflation breakout, averaging 10.6% from

[2]This practice has continued up to the present time, where "entrusted" loans form an important element of shadow credit supply. See Zhang (2014) and McKay and (Song 2012b, Footnote 5, p. 8).

1986 through 1988, China's international competitiveness was eroded by the rapid increase in costs, lowering its global shares of both exports and IVA, while real household incomes were severely damaged.

With rising discontent among the masses, protests became more and more frequent, leading up to the ultimately tragic student uprising at Tiananmen Square in the spring and early summer of 1989. The students originally turned out to mark the death of a respected liberal reformer, Hu Yaobang, who was noted for his outspoken opposition to Mao's anti-Rightist campaigns and the Cultural Revolution, from which he had apparently rehabilitated more than one million victims (Naughton 2007, p. 99). However, as the demonstration morphed into a wide-ranging protest against the many ills of the present system, in addition to a general pro-democracy rally, the demands became more strident and challenging from the perspective of the CCP. In effect, the student demonstrators were challenging CCP legitimacy as a strategic leader for Chinese society. They were voicing their displeasure at the society's current direction and were demanding a stronger voice in its future strategic approach.

Naughton (2007, p. 99) summed the issue up well by stating that the "sense that the government was failing to honour a kind of implicit social compact with urban residents fuelled discontent". In an open society, legitimacy comes from following a coherent strategy that abides by the logic of the *Law of Human Motivation*—that individuals desire to first survive and then prosper (see discussion in Chap. 2). If living standards cease to rise, strategic viability will be questioned along with the legitimacy of any leadership group that has led the society down an apparently unremunerative path. The "implicit social compact" between leaders and individuals in all societies is that the former support, frame, and nurture the strategies that the latter wish to pursue to meet their desires. History is very clear on this matter. If a leadership regime fails on this basic point their legitimacy will be challenged, with the form of the challenge determined by the fundamental strategic mix prevailing in the society in question.

Ceding to the students" most basic demand—that the polity should be reformed to move in a democratic direction—would never have been seriously countenanced by the leadership. This was clearly a matter on which the CCP could be counted on to resort to violence. The reason for this is simple. Once CCP ideology had settled on the idea that Mao was 70% right and 30% wrong (Garnaut 2001, p. 5), much else followed. The 30% circumscribed the excesses of the Cultural Revolution and the Great Leap Forward, which had wrongfully pursued political ideals at the expense of economic reality, with disastrous results. The 70% of Maoist thought that was deemed correct was centred on the superordinate goal of retaining the CCP's supremacy in Chinese polity and society (Garnaut 2001). Leaving that to the vagaries of democratic process was not an option.

With that framework and clear set of priorities in mind, anti-strategic voices inside the CCP predictably re-emerged as the demonstrators massed, with ideology on their side and enormous rents at stake. The moderate Zhao Ziyang, already weakened by the inflationary consequences of the accelerated price reform he championed (Raby 2001, pp. 31–32; Shih 2008, pp. 134–135), was criticised and

then ousted altogether by leftist conservatives, with Deng's apparent acquiescence. Martial law was declared, the powerful intelligence apparatus was heavily mobilised (Faligot 2019: Chap. 5) and the military was ordered to clear the square (Naughton 2007, p. 98). This violent intervention produced graphic footage of courageous individuals confronting tank convoys that were beamed around the world. Whenever the author of this study cogitates on the concept of the anti-strategist, three mental images tend to come to mind. Two are portraits of Mao and Stalin. The third is the tanks of Tiananmen.

Real economic growth plunged to just 4.1% and 3.8% in 1989 and 1990, respectively (figures from the CEIC database). This was mainly due to the lagged impact of anti-inflationary retrenchment policies instituted in the third quarter of 1988 (Garnaut and Ma 2001, pp. 91–93; Perkins 2001, p. 49; Shih 2008, p. 135). The dislocation brought about by political instability would also have contributed. The profound uncertainty brought about by the anti-strategic turn of the CCP in response to Tiananmen would have dealt a severe blow to confidence. When the state of confidence turns, the dynamics of the *Strategic Alternator* move into reverse. The positive dynamics set in train by the success of the 1978–1985 period would have been wasted if the anti-strategists succeeded in gaining longer-run control of the economy in the wake of Tiananmen. That would likely have presaged a return to the incoherence of the Maoist era, when phases of positive achievement were continuously derailed by anti-strategic intrusions: a Sisyphean destiny. At a minimum, it would have implied a retreat from market-oriented reform and openness, both of which engender the competitive disciplines that are anathema to the anti-strategist.

Thankfully for the Chinese people, these hypothetical scenarios did not come to pass. While the conservatives were able to win control of the CCP for a time, they were soon weakened by their lack of a genuine alternative programme to the pro-strategic reform agenda (Naughton 2007, p. 99) and the fact that inflation was soon down to manageable levels, which removed one proximate source of the original discontent. At this critical juncture, Deng personally injected himself back into the debate and he came down firmly on the side of reform and further opening up (Garnaut 2001; Lardy 1998; Lin 2012; Naughton 2007; Perkins 2001; Shih 2008).

Deng's famous Southern Tour of early 1992, in which he made a great show of championing the special economic zones (SEZs), which were symbolic of China's international engagement and thus its participation in the industrial GST, was an unambiguous signal that the society needed to turn decisively away from the anti-strategic flirtation of the Tiananmen interregnum. Deng's exhortation to "dare to take some risks and do something unprecedented" (Shih 2008, p. 144) came at a time when the domestic economy had already recovered somewhat due to the partial rollback of austerity measures as inflation began to come back down in 1990 and 1991. The external sector though was suffering in 1990–91 due to a synchronised downturn in the major advanced economies. Deng's tour was thus serendipitously timed from a cyclical point of view, as it occurred just as world growth was exiting a trough. It would soon provide a supportive backdrop for Chinese exporters.

In tandem with the reinvigoration of the outwardly-oriented strategy, reforms designed to increase central macroeconomic control were instituted, with the programme being led by Chen Yun, who Deng had turned to for support in his competition with the ideologues (Shih 2008, pp. 137–139). Chen positioned a protégé from his technocratic faction, Jiang Zemin, as CCP General Secretary, the post held by Zhao before his ousting. In addition, an extremely capable technocrat, Zhu Rongji, was informally elevated as "economic tsar" (Shih 2008, p. 140), although his formal rank as of 1993 was that of Vice Premier. Along with the Southern Tour, these moves were Deng's last major interventions on economic policy (Naughton 2007, p. 100). They were telling.

Turning again to the *Strategy Grids* (Figure 7.2a and b) the Tiananmen interregnum, including the inflationary lead-up, shows up clearly as a period of malaise. The year 1985 is a strategic kink in Fig. 7.2b with regards to China's share of global IVA. The IVA panel indicated a lurch into the fourth quadrant from 1985 to 1987, implying a dependence on domestic demand in this period, consistent with the inflationary credit expansion of the time, which was negative for China's international competitiveness. The three years 1987, 1988, and 1989 are stacked one on top of the other in 7.2b and 1990 is not far off, implying neither advance nor regress over this phase. However, considering China's extreme state of relative backwardness at this stage of its development, growing at the same rate as the frontier for four years is a very disappointing outcome indeed and must reflect a shortcoming of sub-strategic choice. The export panel (7.2a) shows less dramatic changes, but it echoes the broader patterns.

The rebound from the trauma of the late 1980s is evident in both *Grids*, with a tentative return to a balanced, desirable first-quadrant strategy evident in the 1992 plot. Yet compared to the consistent 45-degree trajectory traced through the first quadrant achieved during the first phase of reform, documented in Sect. 7.2, this latest kink in China's strategic pathway had much still left to prove as the post-Deng leadership settled into their positions.

7.4 Centralising, Turning Outward and "reform with losers": 1992–2001

From 1993, Zhu Rongji was the most powerful voice in economic policy-making and thus strategic direction. Zhu brought a decisive personality to the role. Combined with genuine political power, this enabled him to replace the consensus style of Zhao Ziyang with a more nimble, top-down approach to reform. Unlike Zhao in the 1980s, he possessed executive "power-to-do" and he was willing to exercise it.

The approaches of both Zhao and Zhu were suitable for their eras. Table 7.2 (on the following page) is adapted from Naughton (2007, Table 4.1, p. 91). It offers a succinct comparison of the mode and foci of the reforms pursued in the 1980s and the 1990s. Naughton positions Zhao as a consensus builder, moving ahead gradually

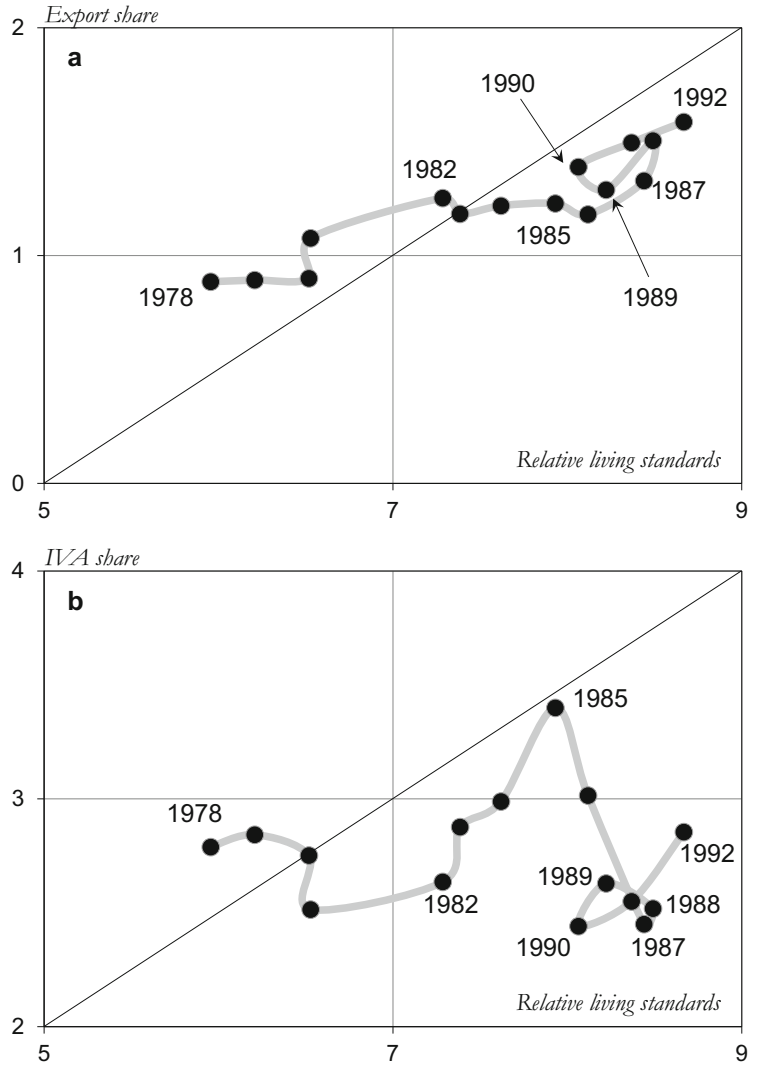

Fig. 7.2 (**a**) China's Export Strategy Grid: 1978–1992. (**b**) China's Industrial Value-Added Strategy Grid: 1978–1992. Sources for Figure 7.2a and b: As for Fig. 7.1

with modest dual-track reforms that arguably created many winners and few losers. Zhu, on the other hand, was tasked with enacting reforms that generated many losers. His decisive style was well suited to cutting through the web of vested interests that could have potentially stalemated any attempt to reform by consensus.

The reform priorities demanded by the developing sub-strategy of the Chinese economy in the 1990s were obviously different from those of the 1980s. The basic contours of a functioning market economy had been constructed in the 1980s

Table 7.2 Contrasting the reforms of the 1980s and 1990s

1980s Reform–Zhao Ziyang	1990s Reform–Zhu Rongji
Cautious, consensual decision-making	Personalised, rapid, decisive decision-making
Introduce markets where feasible	Strengthen market institutions
Focus on agriculture and industry	Focus on finance and regulation
Dual-track strategy	Market unification, unite dual tracks
Particularistic contracts with powerful incentives	Uniform rules: "level playing field"
Competition created by entry: no privatisations	State-sector downsizing: beginning of privatisations
Decentralise authority and resources	Recentralise resources and macroeconomic control
Inflation economy with shortages	Price stability, goods in surplus
"Reform *without* losers"	"Reform *with* losers"

Source: Naughton (2007, Table 4.1, p. 91)

through the dual-track strategy. The task of the 1990s was to build on those achievements by finding a way to unite the two tracks without de-stabilising the entire system, noting that the socialist systems of eastern Europe were imploding at the time, with radical "big bang" reforms generating chaotic outcomes. More specifically, there was a need to move forward from a focus on incentives structures to regulatory design; address the inefficiencies embodied in the SOE sector; commercialise the allocation of credit; move towards formal entry into the global trading apparatus (see discussion in Sect. 7.5); and above all establish a more stable macroeconomic environment that would allow the *Strategic Alternator* to gain positive traction again. If the positive dynamics of the *Strategic Alternator* did begin to compound in a self-propelling fashion, then the goal would be to avoid the errors so evident in the history of the People's Republic up to this point and avoid the temptation to get in the way.

Re-centralisation was successfully pursued in the fiscal domain, with a wholesale vertical fiscal reform enacted in 1994 (McKay and Song 2012b; Wong 2013). West and Wong (2001) provide a useful discussion of the state of fiscal policy prior to the centralising reforms. The starkly different trends in available fiscal resources between 1978 and the early 1990s and then after the 1994 reforms are illustrated in Fig. 7.3.

Central fiscal control was paired with an attempt to gain more effective control over monetary policy, which was a more difficult economic challenge. In a study covering the period up to 1990, Garnaut and Ma (2001, p. 99) state that "the three major macroeconomic cycles identified in the reform period were closely related to the instability of broad money growth". This highlights that the coherent, credible monetary framework demanded by an economy wishing to achieve sustainable modern economic growth was not yet present.

The early reform returns were not especially promising in this regard. Deng's Southern Tour had sparked economic growth, re-orienting the most historically dynamic regions of the economy back towards to global trading system and

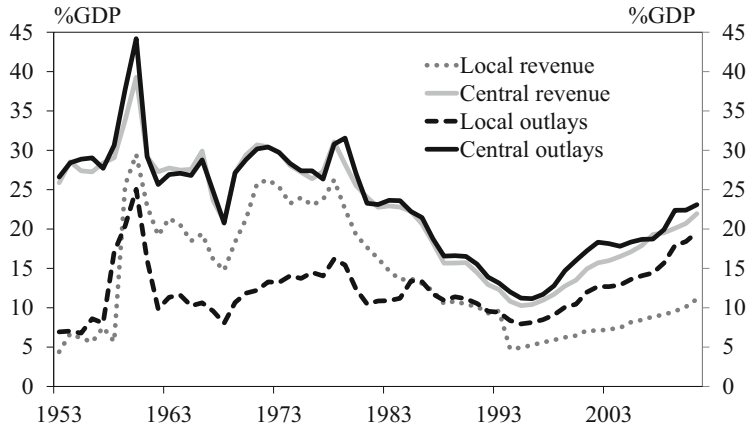

Fig. 7.3 Fiscal revenues and outlays by level of government. Source for Fig. 7.3: CEIC database with calculations by the author. A similar figure was published by McKay and Song (2012a, Fig. 1.4, p. 9)

reinvigorated confidence. Unfortunately, it also engendered, in Naughton's words (2007, p. 102) "a gold rush mentality of speculation and financial excess" which burst forth in a rapid expansion of bank loans and then an inevitable spike in inflation. Deng's impatience with the cautious counsels of the technocrats, plus the zeal of provincial officials in pursuing his expansionist ideas made central control of credit more of a political issue than a technical matter. And even the technocratic faction itself was not immune to the demands of the politics of patronage. Shih (2008, p. 140) describes some of the high politics behind the rapid lending growth of 1993, with Jiang Zemin showering credit on Guangdong and his home province of Shanghai in an effort to shore up political support as Chen Yun, his ultimate sponsor, suffered from deteriorating health. Having spent most of his career in the industrial bureaucracy, and then as Mayor and Party Secretary in Shanghai, Jiang did not at this stage have the breadth of personal support that one might normally associate with such a senior political office holder.

The spike in lending stoked inflationary pressures, as did a substantial managed depreciation of the exchange rate. Indeed, the consumer price level rose by more in the 3-year period from 1993 to 1995 (a cumulative 67%) than in the 3-year period from 1987 to 1989 (a cumulative 50%), when it was sufficient to generate widespread social unrest. The difference in the later period was that the real economy performed considerably better, with a cumulative lift in real GDP of 43%, versus just 29% in the earlier period. Also, when inflation-taming tightening measures were eventually enacted, the resulting growth slowdown was less severe. While real GDP growth fell below 5% for two consecutive years in 1990 and 1991 (see discussion in Sect. 7.3), the trough growth rates in the middle 1990s were much higher, and the economy was able to expand its exports successfully as domestic demand slowed, something that was lacking in the previous phase. The nominal depreciation of the currency helped offset some of the loss of competitiveness from high inflation, while

a major influx of FDI from 1992 to 1994 (Lardy 2001, Table 1, p. 386) increased export capacity markedly in a short space of time.

The managed depreciation of the exchange rate certainly raised inflation in the first instance. However, once the currency was pegged at a level of around 8.3 yuan per US dollar in 1995, China's highly questionable credibility on inflation management was substituted for that of the US Federal Reserve. China was thus able to curb the amplitude of its inflation cycle from that point forward, which was an important contribution towards improving its international competitiveness and attractiveness to foreign direct investors in the following two decades.

All was not well everywhere though, despite the favourable comparison with the previous phase of development discussed in Sect. 7.3. The profitability of the SOEs was coming under serious downward pressure as inefficiency (Huang and Meng 2001; Sachs and Woo 2001) and their considerable employee welfare burden (Watson 2012) eroded their competitive position. Weakened profitability raised a major question regarding their ability to service their now very large debts to the banking system. An economy moving towards an embrace of the market was no longer willing to indefinitely subsidise loss-making enterprises.

At the macroeconomic level, the share of GDP accounted for by the change in inventories was higher in 1990 than in either 1985 or 1980, and at 10.1% was very high in absolute terms (Table 7.1). On this measure, the ability of the dual-track, state-owned economy to match supply and demand at the aggregate level made no real progress over this first decade or so of reform. Furthermore, SOE losses accelerated along with economic growth in 1992, which was a confounding outcome for both local and foreign observers (Sachs and Woo 2001, p. 285). At this time around three-quarters of SOEs by number were making losses. Profitability continued to deteriorate from this point (see Lardy 1998, Table 2.3, p. 35), such that in the first quarter of 1996, the SOE sector as a whole made a loss, the first such result in the history of the People's Republic (Lardy 1998, p. 34; Sachs and Woo 2001, p. 285).

The stark reality of collapsing corporate performance led the CCP Central Committee to address the SOE "problem" head-on (Lardy 1998; Lin 2012). The formal statement that emerged was as follows: "Large and medium-sized SOE are the mainstay of the national economy;. . .[for them,] it is useful to experiment with the corporate system. . .As for small SOE, the management of some can be contracted out or leased; others can be shifted to the partnership system in the form of stock sharing, to be sold to collectives and individuals" (quoted in Sachs and Woo 2001, p. 282). By the end of 1995, this finding had been "sloganised" as "keep the large and free the small" (Sachs and Woo 2001).

Zhu Rongji himself had this to say in 1996: "The current problems of the SOEs are: excessive investments in fixed assets with very low return rates, resulting in sinking large amounts of capital; low sales-to-production ratio giving rise to mounting inventories. The end result is that the state has to inject an increasing amount of working capital through the banking sector into the state enterprises" (quoted in Sachs and Woo 2001). Referring back to Table 7.2, a number of the summary characteristics of Zhu's 1990s reform regime are evident in this statement.

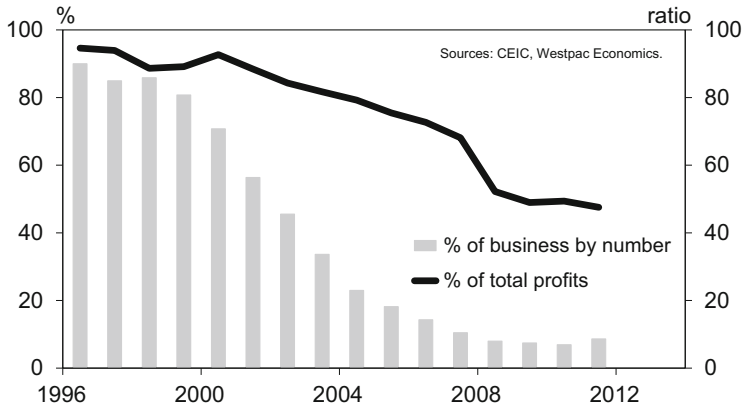

Fig. 7.4 The declining footprint of wholly state-owned firms. Sources for Fig. 7.4: Author calculations utilising the CEIC database

The substantial divestment/privatisation/shutdown of loss-making SOEs that proceeded under the auspices of the CCP pronouncement and the direct and personal condemnation of Zhu Rongji created substantial unemployment and broke the "iron rice bowl" system of worker welfare (He et al. 2014). The end of the requirement for SOEs to provide pensions (Watson 2012), housing, health (Manuel 2011), and education services for their employees alleviated one source of financial strain and tackled their lack of cost competitiveness vis-à-vis firms without such obligations.

The change in beneficial ownership driven by privatisations and the improving incentives embodied in the same, as well as widespread asset stripping[3] (Lardy 1998, pp. 51–52; Sachs and Woo 2001, p. 287) saw the SOE share of investment and industrial output fall sharply (Lardy 1998, Table 2.2, p. 29; Naughton 2007, p. 300), as did its share of employment (Lardy 1998, Table 2.1, p. 27). The decline of the SOE share of industrial profits and the decline of SOEs on a simple unweighted firm count are illustrated in Fig. 7.4.

The multifarious impacts of the SOE problem (and the attempts to address it) on the rest of the economy were substantial. The phrase "reform with losers" indicates that the impression of contemporaries was that the net balance between beneficiaries and casualties during this phase was firmly in the negative. Knowledgeable insiders did very well of course through the process of asset stripping, while the declining size of the SOE footprint in the economy freed factors of production for the use of private firms. The household sector was directly impacted through the loss of public services and pension provisions that created an imperative to boost private savings (Curtis et al. 2015; He and Yongfu 2007; Watson 2012). The asset quality of the banking system was decimated (Huang 2001; Lardy 1998) with the recapitalisation

[3] Asset stripping refers to the unethical practise of transferring the assets of a SOE to a non-state firm while leaving the liabilities with the legacy state entity. This enriches the beneficial owners of the non-state entity while simultaneously crippling the legacy institution.

bill ultimately met, directly and indirectly, by a combination of the taxpayer, depositors, private borrowers, and foreign equity investors (Ma 2006). With the deadline for enacting reforms required for World Trade Organization (hereafter WTO) accession looming into the foreground (Hai 2002), these were difficult times indeed.

The fragilities presented by the SOE–state-owned banks nexus left the economy vulnerable should an adverse external shock present itself. With the onset of the Asian financial crisis in Thailand in the middle of 1997 and its region-wide metastasis over the following 12 months (Garran 1998; McLeod and Garnaut 1998), the resilience of the economy was severely tested. Real GDP growth slowed to below 8% in consecutive years in 1998 and 1999, while consumer prices declined in both years. Taking the longer view, real GDP failed to pass 10% in any year from 1996 to 2002, the longest "double digit drought" in the post-1978 era (at the time), while consumer prices did not recover their 1997 level until 2004 (author calculations using the CEIC database).

China's decision to retain its peg to the US dollar throughout this period, rather than seeking to devalue to at least partially offset the loss of competitiveness brought about by the collapse in the exchange rates of its emerging market and transition economy peers, was lauded by its crisis-ridden neighbours. That was good diplomacy. It did, however, come at a heavy price for both the real and the nominal economy, hindering exports and pushing the burden of regaining international competitiveness through real depreciation onto the price level. Elevated to Premier in 1997, the year of Deng's passing, Zhu Rongji's aggressive fiscal expansion kept growth and employment at a reasonable level through this period. Fiscal policy was the appropriate method for pursuing a counter-cyclical response given the fixed exchange rate and the closed capital account.

Turning to the scatter plots for the period 1992–2001, Fig. 7.5a and b indicate that on a point-to-point basis, the period from 1992 to 1995 was a successful return to a balanced first-quadrant path, with something of a skew towards external demand, consistent with the strategic intent of Deng's Southern Tour, the influx of foreign investment and the managed depreciation of the exchange rate. However, as indicated above, imbalances were building on the back of excess credit growth and the SOE problem was yet to be effectively tackled.

The legacy of the credit-intensive, low-efficiency growth in the domestic economy achieved in the 1992–1995 period was a period of disinflationary adjustment in 1996 and 1997, which left the economy vulnerable to the shock of the Asian crisis, transforming soft growth and low inflation into weak growth and outright deflation.

A point-to-point comparison of 1992 and 2001 in both panels of Fig. 7.5 shows a first-quadrant strategy, but with a considerable shock at the time of the Asian financial crisis. 1996–1998 is actually a second-quadrant kink, albeit one that swiftly course corrected. What can be reasonably said without controversy is that between the depths of the Asian crisis and the turn of the millennium, a new strategic kink occurred, which tilted the economy back in a direction that was again remunerative for relative living standards. This set the society up well for the risks and opportunities pertaining to its forthcoming accession to the WTO in late 2001. Finally, the

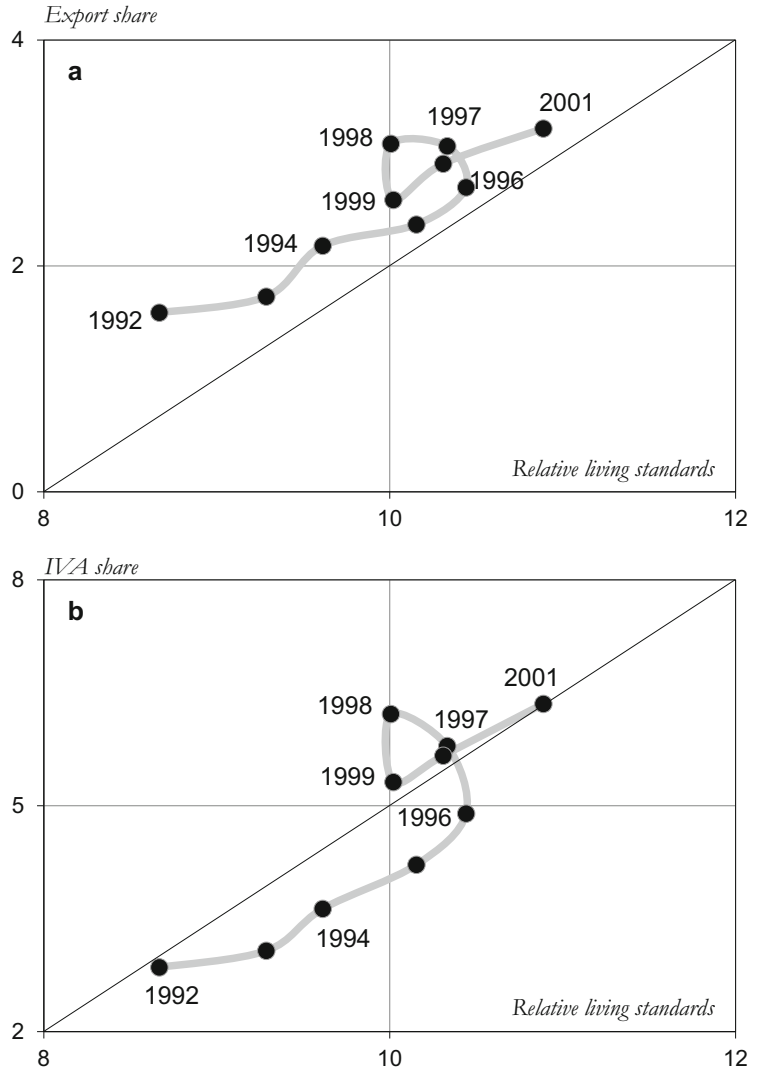

Fig. 7.5 (**a**) Chinese exports and relative living standards: 1992–2001. (**b**) Chinese IVA and relative living standards. Sources for **a** and **b**: As for Fig. 7.1

strategy underpinning the "reform with losers" decade, while a stressful period for both policymakers and society at large, should ultimately be seen as a successful phase in China's economic development.

7.5 China's Engagement with the Global Trading Apparatus[4]

At this point of the study, with China's strategic pathway up to 2001 having been considered, it is appropriate to engage in an aside specifically addressing the international aspects of the reform. China's entry into the WTO on 11 December 2001 unleashed extraordinary forces, with the *Strategic Alternator* in full flight, with an additional tailwind from the 1990s reforms (including the privatisation of real estate) and a hugely stimulatory global environment backed by a rising credit bubble in the USA and many other Western countries.

Brandt and Rawski (2008a, p. 13), talking of the whole period of reform rather than just the post-WTO boom, argue that "international markets have provided China with opportunities (and also risks) that far exceed those available at the time of Japan's and Korea's big growth spurts". This section of the chapter will seek to develop that point, even though it is somewhat misleading to separate the international aspect of reform from its domestic cousin, for the simple reason that they were symbiotic. Readying China's economy to accede to the General Agreement on Tariffs and Trade (GATT) and then later the WTO required it to meet the criterion of being classified as a market economy. The necessary changes to address this criterion were in many cases domestic, ranging across the governance system and in the basic approach to policy formation, such as uniting the dual tracks that featured so prominently in the 1980s (Hai 2002). Any domestic reform that raised the market orientation of the factor allocation decisions tended to improve the international competitiveness of the activity in question, allowing the seeds of dynamic substitution to be put in place. More specific to trade, the introduction of principles such as "most-favoured-nation" designation, national treatment, and non-discrimination made China's trading regime more transparent, efficient, and effective.

Very importantly, in complying with the requirements set by the guardians of the multilateral international trading system, Chinese institutions—across the economic, legal, social, and political spheres—moved closer to international practice, which is of course dominated by the norms established by frontier societies, who have shown themselves to be the most adept pursuers of the technologically led growth that defines the industrial GST. China's experience in this regard illustrates the point that "once economic growth has begun, institutions change more and more in directions favourable to growth, and so strengthen the forces making for growth" (Lewis 1955, p. 143). Institutional change that is responsive to the demand side of a rapidly developing economy is a powerful force for prosperity (Snooks 1997) as well as an ongoing source of legitimacy for the leadership driving the pro-strategic change.

By the end of its first full calendar decade of international engagement, the export share of China's GDP had increased from 10% in 1980 to 19% in 1990. That nine percentage point increase compares with the same degree of increase in Korea from

[4]This section relies heavily on McKay and Song (forthcoming).

1961 to 1970; a ten percentage point gain in Japan's export share from 1878 to 1887 to 1908 to 1913; Taiwan's 18 percentage point gain from 1960 to 1970; Thailand's nine percentage gain from 1970 to 1980; Malaysia's 15 percentage point and Indonesia's 20 percentage point gains in the same decade. Extending the analysis to 1970–1990, Chinese export share rose by 16 percentage points. From 1961 to 1990, Korea's export share rose by 29 percentage points; from 1960 to 1990, Taiwan's rose by an astounding 41 percentage points; from 1970 to 1990 Thailand, Malaysia, and Indonesia saw their export shares increase by 19, 35, and 14 percentage points, respectively [All figures are from Amsden (2001, Table 7.2, pp. 164–165)]. Based on these comparisons, China's first efforts at international engagement were not exceptional in a regional context in terms of the changing structure of its own economy, and it saw a far less dramatic move towards export orientation than its North Asian neighbours, Korea, and Taiwan, and its southern neighbour Malaysia.

By the time China joined the WTO in 2001, the majority of its regional neighbours were members of the WTO predecessor, the GATT, and therefore they automatically ascended to the WTO in January 1995. However, we can compare China's income level at WTO accession to income levels elsewhere at the time of GATT accession as a reasonable guide to the development context of formal engagement with the global trade apparatus (Table 7.3).

At the time of WTO accession China had a GDP per capita level (1990 international dollars) of $2909, 10% of the US level at the time. Excluding the *entrepot* economies of Hong Kong and Singapore, as well as Taiwan, the average income level relative to the USA at the time of accession was 12.7%—or 10.8% if Japan is also excluded. The lowest relative income at accession in this trimmed sample belongs to India, at 6.5% in 1950.[5] The highest relative income at accession belongs to Thailand, at 15.0% in 1982, or Japan at 25.4% in 1955, if it is included. The average for the five ASEAN economies in Table 7.3 (excluding Singapore) is 11.6%. So just as was observed with the increase in export shares, the timing of China's formal accession into the global trading system in terms of its relative income level is quite representative of the broader regional experience.

A nation's engagement with the global economy over time is summarised by the accumulation of real and financial assets claimable from, and by, foreign counterparties. The composition and scale of the net stock of these interactions, the international investment position (hereafter IIP), either at a point in time or over time, is therefore highly instructive. Therefore, Table 7.3 also reports the size and composition of national IIPs as of 2010.

A sovereign nation can in principle determine the style of liabilities to foreign counterparties that it is willing to acquire through the legal framework of exchange arrangements that it designs (McKay 2007). The same point applies to the asset side of a nation's international balance sheet. In China's case, its preference has clearly been to accrue substantial net direct investment liabilities, while limiting the

[5] India joined the GATT in 1948, but the reported relative income level is actually for 1950.

Table 7.3 WTO and GATT accession dates, absolute and relative income levels, and international investment positions

	China	Japan	Korea	Taiwan	Singapore	Hong Kong
WTO accession date	**11 Dec 2001**	1 Jan 1995	1 Jan 1995	1 Jan 2002	1 Jan 1995	1 Jan 1995
GATT accession date	–	10 Sep 1955	14 Apr 1967	–	20 Aug 1973	23 Apr 1986
GDP per capita at accession						
WTO	**2909**	–	–	17,010	–	–
GATT	–	2771	1645	na	5977	13,960
GDP per capita % of US level	**10.1**	25.4	11.5	58.7	35.8	65.7
2010 IIP status, % GDP						
Net IIP	**28.0**	56.3	−13.5	150.1	233.1	293.7
Net direct investment assets	**−20.8**	11.2	0.9	29.4	−99.6	−68.4
Net portfolio investment assets	**0.6**	26.9	−37.1	14.5	221.4	229.2
Net other IIP assets	**−0.1**	−1.6	−6.0	15.8	1.0	9.6
Foreign reserve assets	**48.3**	20.0	28.7	90.0	93.2	119.5
IIP less foreign reserve assets	**−20.3**	36.3	−42.2	60.1	139.9	174.2
	India	Indonesia	Thailand	Malaysia	Philippines	Vietnam
WTO accession date	1 Jan 1995	1 Jan 1995	1 Jan 1995	1 Jan 1995	1 Jan 1995	11 Jan 2007
GATT accession date	8 Jul 1948	24 Feb 1950	20 Nov 1982	24 Oct 1957	27 Dec 1979	–
GDP per capita at accession						
WTO	–	–	–	–	–	2785
GATT	619	803	2745	1455	2323	
GDP per capita % of US level	6.5	8.4	15.0	13.3	12.4	8.8
2010 IIP status, % GDP						
Net IIP	−11.8	−40.8	−12.2	1.7	−5.3	–
Net direct investment assets	−7.2	−21.5	−38.3	−1.8	−9.9	–
Net portfolio investment assets	−10.2	−19.8	−20.4	−35.9	−12.1	–
Net other IIP assets	−15.1	−13.1	−11.6	−2.0	−14.4	–
Foreign reserve assets	20.7	13.6	57.8	41.3	31.2	12.1

(continued)

Table 7.3 (continued)

	China	Japan	Korea	Taiwan	Singapore	Hong Kong
IIP less foreign reserve assets	−32.5	−54.4	−69.9	−39.7	−36.5	–

Sources: Accession dates are from WTO GDP per capita information was collated from the Conference Board's Total Economy Database (Conference Board 2012). International investment positions and the nominal GDP data for scaling them are from the CEIC database with calculations by the author. Notes: The GDP per capita estimates are in 1990 international dollars, consistent with the rest of the text. India's GDP per capita information is for 1950, not 1948

accumulation of net portfolio and other (mainly bank-related) liabilities.[6] On the asset side, it is the public balance sheet, via holdings of foreign exchange reserves, that has dominated China's global interaction (see Table 7.3).

This style of IIP is quite common in the region. China's foreign reserve holding of 48.3% of GDP in 2010 was in the top half of the sample, but it trailed Thailand, Taiwan, and the two *entrepots*, while Malaysia was not that far behind it. The dominance of foreign reserves in the IIP of East Asian countries has been much remarked upon, from a number of theoretical and ideological standpoints (for instance, McKinnon and Schnabl 2014; Rodrik 2006). China's choices may well have been determined by the mistakes it observed among some of its neighbours in the 1990s that ultimately left them reliant on the mercy of their foreign creditors and the multilateral "Bretton Woods" institutions, in particular the IMF. The principle of self-insurance that arose from those traumatic times is highly evident in the asset and liability stocks China and its neighbours have sought in the new millennium.

7.6 Dynamic Substitution in China's Trade

At the time of its initial re-engagement with the global economy in the late 1970s, China's major potential exports were raw and processed primary products and low-value-added, labour-intensive manufactures. That is similar to the situation that prevailed in the pre-civil war USA, late Tokugawa Japan, and South Korea in the middle 1950s after its own civil war. As discussed in Chaps. 3 and 4, these are all societies that have exhibited the dynamic substitution effect in their international trade over the course of their long-run engagements with the industrial GST. This section will outline China's own experience in this regard.

The concept of "revealed comparative advantage" (hereafter RCA), developed by Bela Ballassa (1965, 1977), is a simple and intuitive means of tracking how an economy structures its international trade relative to the global norm, from which

[6] Other liabilities include loans (from private and public entities), deposits and trade credit. Derivatives are excluded from the analysis.

sub-strategic intent can be deduced. Works such as Leamer (1984) and Song (1996) highlight the utility of the framework for comparative analysis. An example RCA statistic for Chinese tea exports at a point in time is computed as follows:

$$\frac{X_{\text{China,tea}}}{X_{\text{China}}} \Big/ \frac{X_{\text{world,tea}}}{X_{\text{world}}} \tag{7.1}$$

That is, the share of tea in Chinese exports is divided by the share of tea in world exports. If the result of Eq. 7.1 is greater than 1, China exhibits RCA in tea and if the result is less than 1 it does not. Table 7.4 presents RCA statistics for a range of sectors from 1970 to 2010. The data are presented in decade-long intervals from 1970 to 1990 and in 5-year intervals from 1990. The industry sectors are selected to represent both high and low-value-added pursuits, reflecting a wide range of relative factor intensities. The countries and regions are selected to capture a range of income per capita levels, comprising both frontier economies and those yet to achieve, or even closely approach, that distinction.

In 1980, the data suggest that China exhibited a material RCA in labour-intensive products such as clothing, footwear, and luggage products, but at this stage the newly industrialised economies (hereafter the NIEs) were relatively much stronger in this area (Table 7.4). At this stage, China unsurprisingly showed no real competence in the more technologically advanced areas of general or electrical machinery, capital-intensive pursuits which were the province of the advanced economies—represented by Japan and the USA in the table, while noting that some European nations are also prominent exporters of these products—at the time. China's RCA in labour-intensive sectors continued to rise through the 1980s and 1990s, peaking around the time of WTO accession. It had no comparative advantage to speak of in electrical machinery until the 2000s.

China's historical comparative advantage in labour-intensive goods is very well understood and it stands out in Table 7.4. Massive migration from rural to urban areas supplied the abundant labour force needed to fuel industrialisation, while foreign capital was required for the introduction of modern production methods in manufacturing. In the period 1978 to 2011, more than 250 million migrant workers had moved into China's towns and cities or engaged in off-farm work. Without the internationalisation of the economy, and the inward foreign investment that came with it, the number of rural migrant workers that China could have productively absorbed into its urban industrial sector would have been far fewer. Nor would China have been able to gainfully redeploy the many millions of unemployed urban workers cast adrift by SOE rationalisation during the "reform with losers" era (Garnaut et al. 2006; Song et al. 2005).

The dynamic substitution effect encapsulates the ability to develop new comparative advantages and to raise productivity levels at a pace sufficient to maintain international competitiveness despite labour incomes growing more rapidly than elsewhere. Evidence of dynamic substitution comes through in a rising share of higher value-added products in exports; a falling share of low-value-added products in exports; and a falling share of high-value-added products in imports, resulting in

Table 7.4 Revealed comparative advantage: 1970–2010

	1970	1980	1990	1995	2000	2005	2010
Machinery (SITC 71)							
China	**0.1**	**0.1**	**0.3**	**0.4**	**0.7**	**0.4**	**0.7**
Japan	0.9	1.4	1.6	1.7	1.5	1.6	1.8
NIEs[1]	0.1	0.4	0.8	1.0	1.4	0.3	0.5
ASEAN[2]	0.1	0.2	0.8	1.2	1.4	0.5	0.5
USA	1.6	1.9	1.3	1.4	1.4	2.0	1.3
Electrical machinery (SITC 72 and 77)[3]							
China	**0.2**	**0.2**	**0.7**	**0.9**	**1.1**	**1.3**	**1.6**
Japan	2.1	2.5	2.1	1.9	1.6	1.8	1.7
NIEs	1.8	2.3	2.0	2.0	1.8	2.5	2.6
ASEAN	0.2	1.2	1.8	2.0	2.1	3.0	2.7
USA	1.2	1.5	1.3	1.2	1.2	1.2	0.9
Luggage and handbags (SITC 83)							
China	**2.8**	**3.4**	**3.1**	**8.6**	**7.9**	**5.0**	**4.6**
Japan	2.0	0.3	0.1	0.0	0.0	0.0	0.0
NIEs	8.9	16.2	6.5	2.1	0.8	0.2	0.1
ASEAN	0.4	0.4	1.2	1.1	1.2	0.5	0.3
USA	0.2	0.3	0.2	0.2	0.3	0.2	0.2
Clothing (SITC 84)							
China	**2.0**	**4.7**	**4.9**	**5.1**	**4.6**	**3.5**	**3.5**
Japan	1.2	0.2	0.1	0.0	0.0	0.0	0.0
NIEs	13.3	10.1	4.2	2.1	1.7	0.8	0.2
ASEAN	0.3	0.9	1.8	1.4	1.2	0.9	0.8
USA	0.3	0.3	0.2	0.4	0.4	0.2	0.1
Footwear (SITC 85)							
China	**1.3**	**1.8**	**3.8**	**6.1**	**6.4**	**4.1**	**3.5**
Japan	1.1	0.1	0.0	0.0	0.0	0.0	0.0
NIEs	3.6	7.8	5.1	1.1	0.3	0.3	0.2
ASEAN	0.2	0.4	1.3	2.1	1.1	0.7	0.6
USA	0.0	0.1	0.1	0.1	0.1	0.1	0.1

Source to Table 7.4: Garnaut and Song (2006, p. 62, Table 4), with updates for 2005 and 2010 utilising the UN COMTRADE database. Notes to Table 7.4: (1) NIEs stands for "newly industrialised economies" (viz. Singapore, Taiwan, Hong Kong, South Korea). (2) ASEAN stands for the "Association of South-east Asian Nations". (3) The third revision to the SITC altered the code for electrical machinery from 72 to 77

an improving trade balance. The key point is that to be judged as "dynamic substitution", the change in the trade balance must be attributable to rising competitiveness, and not with a policy framework that artificially pursues import substitution.

Evidence of dynamic substitution has been presented with regards to the USA in Chap. 3, with regards to Japan in Chap. 4, and with respect to South Korea in McKay and Song (2010). The evidence that China was part-way through a process of

dynamic substitution late in the Hu-Wen era is strong. Table 7.4 shows that China steadily gained a comparative advantage in producing machinery (SITC 71) from a very low base in 1970. By 2010, its RCA was still relatively low compared with both Japan and the USA, and it was still less than 1. However, it exhibits a higher RCA than the NIEs and ASEAN. China's changing RCA in electrical machinery (SITC 72 and 77) is relatively more pronounced. This is an industry in which both Japan and the USA have seen their comparative advantage in producing these products steadily eroding. The rising RCA of the NIEs and ASEAN up to 2005 was striking. The relative performance of China's RCA underscores the world-wide relocation of industries driven by the changes in their respective underlying comparative advantages.

China's changing RCAs reported in Table 7.4 illustrate key two points. One is that China still enjoyed a clear comparative advantage in labour-intensive products immediately prior to the ascent of Xi. However, its strong base in producing and exporting those products had been gradually eroded by rising real wages resulting from the unique demographic profile brought about by both the one-child policy (Golley and Tyers 2006) and the male gender preference (Golley and Tyers 2014), as well as the inevitably slower pace of rural–urban migration beyond the Lewis turning point (Garnaut 2010). The other is that China has yet to fully exert a comparative advantage in capital-intensive and technologically sophisticated products as of 2010. These two points, taken together, argue that while China has certainly been exhibiting the dynamic substitution effect in the composition of its trade, this was not yet a mature phenomenon in the latter years of Hu-Wen.

Coming at the issue from a slightly broader perspective, Fig. 7.6 shows China's overall merchandise trade balance alongside selected sectoral balances. While RCA provides an empirical commentary on international competitiveness by sector through the lens of relative export orientation, it is silent on developments in import penetration and intra-industry trade. Here the prosaic measure of sectoral trade balances offers a useful supplement to the more sophisticated RCA.

The trends illustrated in Fig. 7.6 are incredibly striking. Proceeding roughly chronologically, there was a steep decline in the machinery and transport trade balance as import restrictions were removed in the second half of the 1980s (see discussion above); a dramatic widening of the "other" manufacturing balance as first the economy opened after 1985 and then the first major wave of FDI entered the country in the wake of the Southern Tour; a spectacular swing from a big trade deficit in machinery and transport in the middle 1990s to an equally large surplus by the middle 2000s; an enormous deterioration in the raw materials deficit in the 2000s; and a levelling off in each these trends (and in the total balance) in the first few years of the 2010s.

The trends highlighted above are consistent with China exhibiting dynamic substitution in its international trade. To completely deal with the dynamic substitution theme, it is necessary to complement the RCA and sectoral balance data with an investigation of China's share of world exports and imports both in the aggregate and in selected industries. Tables 7.5 and 7.6 contain the relevant information for this discussion. Note that the time intervals, comparison regions and countries, and

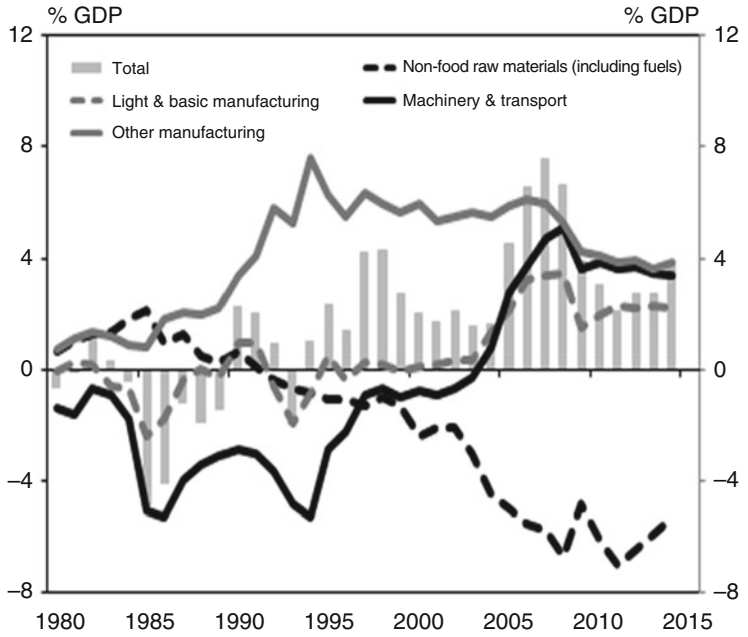

Fig. 7.6 China's broad sectoral trade balances: 1980–2013. Source for this figure: Author calculations from the CEIC database. Notes: Underlying trade data are in US dollars, scaled by the author's estimate of USD GDP, utilising inferred exchange rates from the international trade figures

industry sectors are slightly different from those in Table 7.4, reflecting a different source of underlying data.

China produced 1.8% of the world's merchandise exports and absorbed 1.6% of world merchandise imports in 1990 ("merchandise" will be dropped from here forward in this section). It enjoyed increasing export and import market shares through the 1990s, but the pace at which it made these gains was relatively sedate compared to what was to come. Between 2000 and 2005—circumscribing the WTO accession date and its immediate aftermath—China's share of world exports rose by 3.4 percentage points. From 2005 to 2010, it climbed again from the higher base, by a further 3.1 percentage points. The corresponding gains in import share were 2.8 percentage points and 2.9 percentage points, respectively. So, in the relatively short space of 20 years, China was able to increase its share of world trade fivefold from a non-trivial base in 1990.

The growth in China's global share of a number of manufacturing export categories has been nothing short of breathtaking. In textiles, a traditional area of comparative advantage, its export share rose from 6.8% in 1990 to an extraordinary 37.8% in 2015. Its share of ferrous metals exports climbed from 1.2% in 1990 to 16.8% in 2015. Its share of office and telecommunications exports rose from 1% in 1990 to 34% in 2015. Its share of electronics components exports increased from 1.7% in 2000 to 19.5% in 2015.

Table 7.5 China's percentage share of global exports: 1990–2015

Global exports of merchandise	1990	1995	2000	2005	2010	2015
China	1.8	2.9	3.9	7.2	10.3	13.7
Japan	8.2	8.6	7.4	5.7	5.0	3.8
NIEs	6.1	7.5	10.3	9.6	9.8	10.1
India	0.5	0.6	0.7	0.9	1.5	1.6
USA	11.3	11.3	12.1	8.6	8.4	9.1
Fuel and mining exports	1990	1995	2000	2005	2010	2015
China	1.3	1.5	1.4	1.7	1.6	2.3
Japan	0.8	1.3	0.9	0.8	1.1	1.1
NIEs	2.9	3.9	3.9	3.8	4.3	4.8
India	0.3	0.3	0.3	1.0	1.8	1.7
USA	4.9	4.6	3.2	2.8	4.2	6.0
Textiles exports	1990	1995	2000	2005	2010	2015
China	6.9	9.1	10.3	20.2	30.4	37.8
Japan	5.6	4.7	4.5	3.4	2.8	2.1
NIEs	20.4	25.9	24.9	17.2	13.0	10.5
India	2.1	2.9	3.6	4.1	5.1	6.0
USA	4.8	4.8	7.0	6.1	4.8	4.8
Iron and steel exports	1990	1995	2000	2005	2010	2015
China	1.2	3.4	3.1	6.1	9.4	16.8
Japan	11.8	11.3	10.5	8.7	9.9	8.0
NIEs	5.2	6.9	9.7	8.8	9.5	9.4
India	0.2	0.6	0.9	1.7	2.5	2.2
USA	3.3	3.7	4.5	3.6	4.1	4.2
Automotive exports	1990	1995	2000	2005	2010	2015
China	0.1	0.1	0.3	1.1	2.6	3.7
Japan	20.8	17.0	15.3	13.3	13.7	10.3
NIEs	1.2	2.7	3.3	4.9	5.9	6.1
India	0.1	0.1	0.1	0.3	0.7	0.9
USA	10.2	11.0	11.7	9.4	9.1	9.7
Office and Telco exports	1990	1995	2000	2005	2010	2015
China	1.0	2.4	4.5	17.7	27.8	34.0
Japan	22.5	17.6	11.2	7.7	5.7	3.5
NIEs	20.3	26.3	24.9	27.5	29.9	33.2
India	0.1	0.1	0.0	0.1	0.2	0.1
USA	17.3	16.2	15.9	9.8	8.3	8.2
Electronic components exports	1990	1995	2000	2005	2010	2015
China	na	na	1.7	5.9	13.0	19.5
Japan	na	na	13.8	11.6	9.8	6.1
NIEs	na	na	31.0	41.2	52.6	60.2
India	na	na	0.0	0.1	0.2	0.1
USA	na	na	20.5	14.0	9.9	7.9

Source: All underlying data are from the WTO's online statistics portal

Table 7.6 China's percentage share of global imports

Global imports of merchandise	1990	1995	2000	2005	2010	2015
China	1.5	2.5	3.4	6.1	9.0	10.0
Japan	6.5	6.4	5.7	4.8	4.5	3.9
NIEs	6.2	8.2	9.8	8.8	9.3	9.1
India	0.7	0.7	0.8	1.3	2.3	2.4
USA	14.4	14.6	18.9	16.1	12.8	13.8
Fuel and mining imports	1990	1995	2000	2005	2010	2015
China	0.6	1.9	3.8	6.4	11.8	14.3
Japan	15.2	13.4	10.9	8.8	8.0	6.7
NIEs	8.0	11.3	10.8	9.7	10.9	11.4
India	1.7	2.0	2.4	2.8	4.0	5.2
USA	16.6	14.7	18.5	18.2	12.9	9.9
Textiles imports	1990	1995	2000	2005	2010	2015
China	4.9	7.0	7.8	7.2	6.6	6.1
Japan	3.8	3.8	3.0	2.7	2.7	2.6
NIEs	14.3	16.2	12.7	9.6	7.3	5.5
India	0.2	0.2	0.4	0.9	1.0	1.3
USA	6.2	6.7	9.7	10.5	8.7	9.5
Iron and steel imports	1990	1995	2000	2005	2010	2015
China	2.5	4.2	6.4	7.9	5.8	4.9
Japan	4.1	3.5	2.4	2.2	2.0	1.8
NIEs	8.8	12.7	10.6	9.8	9.4	7.6
India	1.0	0.9	0.5	1.3	2.3	2.6
USA	9.5	9.3	12.7	9.1	7.2	9.9
Automotive imports	1990	1995	2000	2005	2010	2015
China	0.6	0.5	0.7	1.4	4.8	5.5
Japan	2.3	2.4	1.7	1.4	1.3	1.5
NIEs	1.9	2.9	1.6	1.5	1.8	2.3
India	0.1	0.1	0.1	0.1	0.4	0.4
USA	24.7	21.8	29.5	21.9	17.0	22.1
Office and Telco imports	1990	1995	2000	2005	2010	2015
China	1.3	2.4	4.4	11.8	15.7	20.2
Japan	3.7	6.2	6.0	4.9	4.7	4.2
NIEs	13.7	19.7	19.3	20.6	22.5	26.1
India	0.2	0.2	0.3	0.7	1.2	1.7
USA	21.1	23.1	21.3	17.1	16.1	17.0
Electronic components import	1990	1995	2000	2005	2010	2015
China	na	na	6.3	23.5	31.4	40.5
Japan	na	na	6.0	5.2	4.2	3.8
NIEs	na	na	31.0	39.5	42.1	46.4
India	na	na	0.2	0.2	0.4	0.7
USA	na	na	14.9	6.6	5.2	6.4

Source: All underlying data are from the WTO's online statistics portal

On the import side, China's increasing market share has been most pronounced in those areas providing components for its export assembly industries and in the primary products that fuelled—literally—the rapid and increasingly resource- and energy-intensive economic growth that China was engaging in. Indeed, one might see the rise in China's share of imports of electronic components as a proxy for its swift integration into regional value chains, and its rising share in the imports of fuels and mineral products as a symbol of its growing share of the secondary industry activity (comprising manufacturing, utilities and construction) taking place around the world, including an increasingly large share of tradable and non-tradable heavy industrial output.

China has also raised its global share of automotive imports, with a steep increase after 2005, but the absolute level was still quite low as of 2015. This reflects the fact that despite a major uplift in vehicle ownership since WTO accession, China has been able to satisfy the majority of this increased demand through domestic output.[7] As the automotive sector is the archetypal high-value-added industry, this is evidence in favour of a successful move up the productivity ladder in one bellwether sector at least. However, the contribution of truly indigenous firms is considerably overstated by the headline figures. At the higher value-added end of manufacturing, China is still reliant on imported technology and tacit knowledge from foreign joint venture partners. The auto sector is just one example of that. While the overall importance of foreign-funded firms in total trade has decreased substantially in recent years, they remained a major presence at the outset of the Xi era, accounting for between 45% and 50% of exports and imports (Fig. 7.7). This factor led to a considerable gap between gross exports and local export value-added (Anderson 2007).

Memorandum item to Tables 7.5 and 7.6: China's RCA on a broad sectoral basis.

Merchandise sector	1990	1995	2000	2005	2010	2015	2019
Textiles	3.9	3.2	2.7	2.8	2.9	2.8	3.0
Iron and Steel	0.7	1.2	0.8	0.8	0.9	1.2	1.0
Automotive	0.0	0.0	0.1	0.1	0.2	0.3	0.3
Office and Telco	0.6	0.8	1.2	2.4	2.7	2.5	2.4
Electronic components	na	na	0.5	0.8	1.3	1.4	1.5

Source: All underlying data are from the WTO's online statistics portal, with calculations by the author

This reliance on imported technology also highlights that the dynamic substitution process in China was far from mature in the first half of the 2010s, with

[7] The author calculates that the share of domestically made vehicles in total unit sales has averaged 96.6% between January 2000 and September 2015. In the first 9 months of 2015, the share averaged 98.9%, implying a rising share over the period, which in turn implies an increase in the competitiveness of local production vis-à-vis imported vehicles.

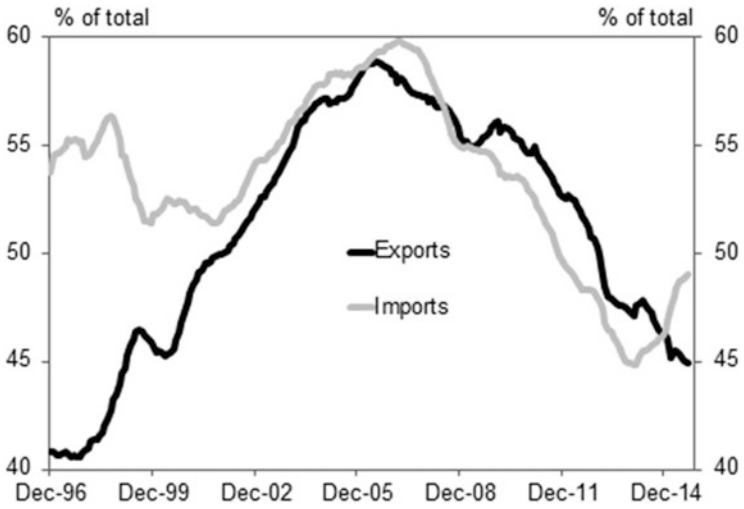

Fig. 7.7 The importance of foreign firms in China's trade flows. Source to Fig. 7.5: Author calculations from the CEIC database

considerable future potential for indigenous firms to raise their technical sophistication and their international competitiveness vis-à-vis foreign firms operating in such fields, whether they are located in China or abroad. Figure 7.7 illustrates the historical importance of foreign-funded firms in China's trade. While they remain a huge element of the story on both the import and export sides of the ledger, it is also clear that their relative contribution peaked in the mid-2000s. The downtrend that started at this point continued through to the early years of Xi's first leadership term.

In sum, this extended aside on China's international engagement, comprising Sections 7.4 and 7.5, has highlighted the importance of the external sector to China's strategy in the reform era. It has also presented a range of empirical evidence supporting the contention that China has been undergoing a process of dynamic substitution since the initial opening-up while gauging that this process is not yet mature. That is an important consideration for the following chapter. It is now time to return to the mainspring of the discussion.

7.7 China's Strategic Pathway: The Hu-Wen Era

The strategic pathway traced by China in the Hu-Wen era (and the tail-end of Jiang Zemin), summarised in the *Strategy Grids* of Fig. 7.8a and 7.8b, is a vivid illustration of a staggeringly successful phase in the nation's economic history. The self-propelling pro-cyclical dynamics of the *Strategic Alternator* were unleashed during this phase, driving a spectacular increase in absolute and relative living standards. The benefits of the reforms enacted in the 1990s began to flow, WTO entry in late

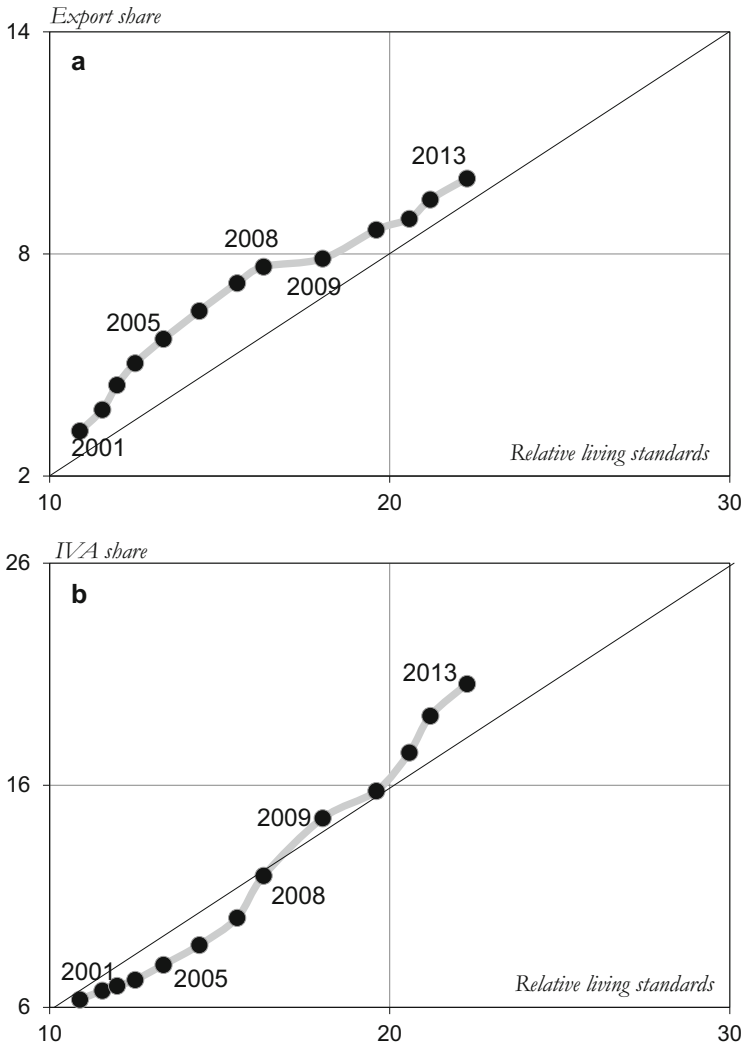

Fig. 7.8 (**a**) Chinese exports and relative living standards: 2001–2013. (**b**) Chinese IVA and relative living standards. Sources for Fig. 7.5: As for Fig. 7.1

2001 positioned China advantageously to leverage the rising demands of credit-fuelled consumers in the West, while China's own domestic economy boomed. The end result (see both panels of Fig. 7.8) was a highly desirable, balanced first-quadrant strategy featuring uninterrupted and rapid progress in terms of China's rate of catch-up to the global frontier, alongside a consistent increase in its global share of both exports and IVA. Indeed, between 2001 and 2013, China was not far short of tripling both its world export share and its relative income position.

To say that this period was all smooth sailing though would be incorrect. The economy was still enduring deflation at the outset of the period and was also yet to complete the required restructuring of the banking system (Huang 2001) or to address the issue of whether a fixed exchange rate was still the most appropriate anchor for its monetary policy (McKay 2007). It experienced a volatile growth and inflation path through the years leading into the GFC, with policymakers forced to alternate quite rapidly between restrictive and accommodative macroeconomic and microeconomic policy stances (McKay 2011). The "animal spirits" in the economy, fuelled by the positive dynamics of the *Strategic Alternator*, produced, at times, unsettling high demand growth that periodically pushed hard up against the economy's supply capability (and that of the entire world, where industrial raw materials were concerned). All told, the leadership team of President Hu and Premier Wen, the successors of Jiang Zemin and Zhu Rongji, proved adept at using traditional counter-cyclical tools to maintain consistently high rates of economic growth, thereby allowing confidence to compound positively from phase to phase. They were, however, disappointingly conservative in terms of maintaining the momentum of reform with regards to increasing the marketisation of the economy and working to both alleviate the distortions they inherited and those that were further inflamed under their watch. Many reform tasks were left to Xi, in addition to the legacies of the imbalanced structure that emerged over the period of high growth and generally accommodative macroeconomic policy.

The period during and immediately after the GFC, the final years of the Hu-Wen leadership, were genuinely difficult. This period was characterised by slowing export and domestic demand growth, rising corporate and local government debt levels (a legacy of the huge stimulus efforts of 2008–09), volatile terms-of-trade, swift demographic change, the first leadership transition executed without at least second-order revolutionary imprimatur,[8] a more complicated geopolitical backdrop, rising complexity in international financial relations and sharply decreasing environmental amenity.

The result was a moderate trend decline in the level of society-wide confidence, which by the middle of the 2010s had manifested in a new problem for China's macroeconomic policymakers: investment growth was slowing and demand for credit was low *despite* an easing of monetary conditions. So, while China can look back on the rate of economic advancement under Hu-Wen with some satisfaction, Xi's economic inheritance was far from unambiguously positive, with major vulnerabilities present.

Returning to the scatter plots in Fig. 7.8a and 7.8b, the similarity between China in the 2000s and the first half of the 2010s and Japan from the 1950s up to the time of the first oil crisis (Figs. 4.7 and 4.8) is striking. What is different is the global scale at

[8]This refers to the fact that Jiang Zemin was the last CCP leader to be personally supported in his position by a Revolutionary elder, in this case Deng Xiaoping. His successors overlapped with him, but the Xi-Li leadership had no direct personal connection to the revolution, although there is an intergenerational one in the case of Xi himself.

which China's engagement took place. China entered the WTO when it already produced just less than 4% of world exports, versus just less than 3% for Japan in 1960. A dozen years later, China was the world's largest exporter of goods, with a share of close to 11%. Japan's ability to double its share of world exports over a dozen years from 1961, to just under 6%, is remarkable in its own right. It was, however, far less de-stabilising for the world economy than the scale of China's compressed ascent.

One illustration of the global import of China's strategic pathway in this phase is the way that China consistently turned the terms-of-trade against itself. China's rapidly growing demand for metals and energy increasingly taxed the ability of the global extractives industries to keep up over the course of the 2000s and during the stimulus era (McKay 2008, 2011, 2012; McKay et al. 2010).

Returning to another familiar formulation, Tables 7.7 and 7.8 outline various indicators of Chinese economic structure up to the end of 2014. The previous rendering (Table 7.1) was equivalent to the upper panel (7.6a) and included data up to 1995. The lower panel (7.6b) offers a snapshot of the changing importance of the external sector to Chinese industrialisation over time, beginning in 1985, reflecting the availability of current account data. Note the caveat that while the true structural breaks in China's post-1978 economic history do not perfectly align with the neat intervals in the table, point-to-point comparisons remain instructive regarding the changing strategic inclinations of the economy.

The period from 1995 to 2000, which encompasses the Asian crisis and featured the weakest growth since the Tiananmen interlude, saw a sharp decline in the primary industry share of output; a sharp increase in services activity; and a modest decline in the secondary industry share, concentrated on construction. The investment share of GDP declined heavily, but the movement was almost fully explained by a decline in inventory accumulation rather than a drop in fixed investment. The fact that the change in inventories was equivalent to just 1% of GDP in 2000 represented a major break with the 1980s and early 1990s. The change in inventories was equivalent to 8% of GDP, on average, between 1978 and 1995, and was only a little higher than that from 1952 to 1978. The increased marketisation of the economy under Zhu Rongji, including addressing the SOE problem, was clearly delivering considerable dividends on the efficiency front by 2000.

That final observation is supported by the data in Fig. 7.9, which depicts trends in investment efficiency during the reform era. Investment efficiency is proxied by the incremental capital-to-output ratio (hereafter ICOR). Note that the ICOR is the investment *share* of GDP divided by the growth *rate* of GDP. Lower ICOR readings imply more efficient investment and higher readings less efficient investment. For example, an economy investing 36% of its GDP and growing at 9% would have an ICOR of $36 \div 9 = 4$ in that year. If the growth rate were to fall to 6% in the following year while the investment share was unchanged, the ICOR would rise to 6 ($36 \div 6$). In the reform era, on a 5-year average basis, China's ICOR has oscillated between 3 (very efficient) and 6 (not very efficient), with readings below the middle of that range generally associated with GDP growth in excess of 10% and readings above

Table 7.7 Various indicators of Chinese industrialisation: 1978–2014

% GDP	Primary industry	Tertiary industry	Secondary industry	of which		Gross capital formation	of which	
	(ex mining)			Mining, manufacturing, and utilities	Construction		Fixed	Change in inventories
1978	27.9	24.5	47.6	43.9	3.8	38.2	29.8	8.4
1980	29.9	22.2	47.9	43.8	4.3	34.8	28.7	6.1
1985	28.1	29.3	42.6	38.1	4.6	39.0	30.4	8.6
1990	26.7	32.4	40.9	36.4	4.6	34.0	23.9	10.1
1995	19.7	33.7	46.7	40.7	6.1	39.3	32.8	6.5
2000	14.7	39.8	45.4	40.0	5.5	33.9	32.9	1.0
2005	11.7	41.4	46.9	41.4	5.6	40.5	39.5	0.9
2010	9.6	44.2	46.2	39.7	6.6	47.2	44.6	2.7
2014	9.2	48.2	42.6	35.8	7.0	46.0	44.2	1.9

Table 7.8 External indicators of Chinese industrialisation: 1978–2014

% GDP	Gross exports	Gross imports	Gross national savings	Current account balance	Net exports
1985	8.3	12.3	35.4	−3.6	−4.0
1990	12.4	9.7	37.2	3.2	2.7
1995	18.0	16.3	39.8	0.5	1.6
2000	20.9	18.6	35.6	1.7	2.4
2005	33.7	28.3	46.3	5.8	5.4
2010	26.7	23.0	51.2	3.9	3.7
2014	23.7	21.0	48.2	2.1	2.7

Sources to both panels of Table 7.1: Author's calculations from Chinese National Bureau of Statistics data extracted from the CEIC database

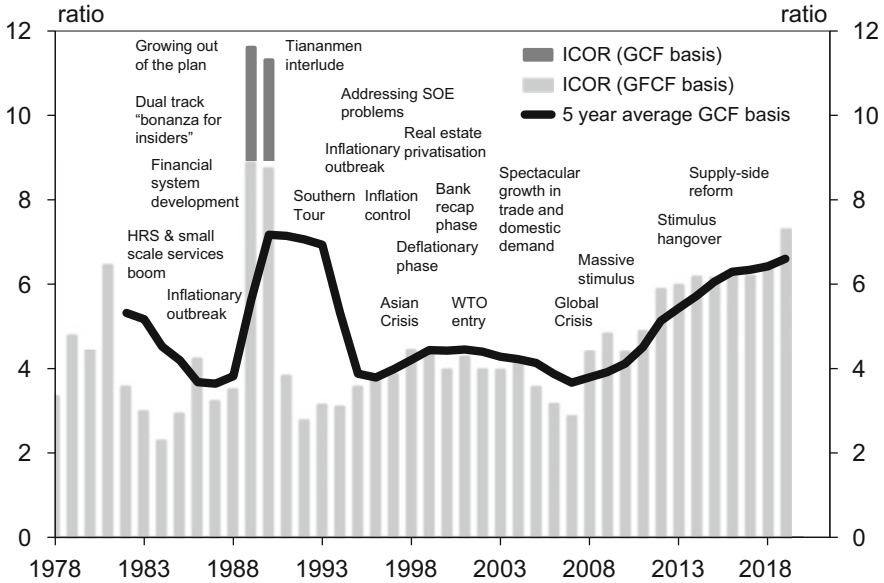

Fig. 7.9 The efficiency of Chinese investment in the reform era: ICOR ratios. Sources for this figure: Author calculations based on World Bank data. See explanation in the text

the middle of the range associated with slowdowns to single-digit annual percentage rates.

The rich growth pickings between WTO entry and the GFC were associated with a steady march lower for the ICOR. The reforms of the 1990s contributed to this "productivity dividend" in two main ways. The direct impact was the increased commercialisation of the corporate and financial sectors, and the privatisation of real estate, which improved the economy's overall allocative efficiency vis-à-vis the previous conditions that prevailed. The second was that these domestic reforms made WTO entry possible (Hai 2002), which further amplified the unprecedented

external opportunities available to China referenced by Brandt and Rawski (2008b, p. 13), which sustained an ever-widening external surplus from 2002 right up to the precipice of the GFC, despite an increasingly adverse terms-of-trade. The difficulties that have emerged since that time have led to a consistent upward march in the ICOR. While there has been no return to the wasteful rise in inventories of previous eras, their share of GDP has risen from the halcyon days of 2005, and it is undeniable that both sides of the ratio moved adversely from an efficiency standpoint between 2005 and 2010, with growth slowing and the investment share on the rise (see Table 7.7). Between 2010 and 2014, the investment share declined by around one percentage point while growth continued to decelerate. On both a 1-year and 5-year basis, the ICOR for 2014 was the highest since the Tiananmen interlude.

A consistent trend towards a lower return to capital, a corollary of declining investment efficiency, has obvious implications for the *Strategic Alternator*. While the dynamics associated with a lower (albeit still positive) return world are still consistent with economy-wide growth, the rate of expansion must inevitably fall as fewer projects are deemed worthy of pursuit (from the point of view of the entrepreneur or firm) at the margin, and some that are deemed worthy by prospective borrowers will not receive external financing from an increasingly sober pool of lenders: or perhaps not at a price that the developer would find reasonable.

Under such circumstances the level of confidence is not high enough to finance the pursuit of either obviously risky activities or unseasoned borrowers; but not low enough to hinder the flow of refinancing for existing activities or the supply of new financing for projects of a conventional type put forward by well-established borrowers. If, however, some borrowers can access finance despite a modest or weakening economic proposition—i.e., they face a soft budget constraint for some reason—they will continue to add debt even as their ability to service such obligations is reduced. That is, in fact, what has happened in China's heavy industrial SOE sector, where profitability deteriorated consistently through the stimulus era, with their liability ratios increasing substantially (IMF 2015, Box 3.3., pp. 103–104). This is a case of an implicit or explicit guarantee overriding the parameters of the *Strategic Alternator*. The issue of containing and then reducing excessive corporate debt was one that Hu-Wen bequeathed to Xi.

Turning now to the (predominantly) external aspects of China's changing economic structure through time, as summarised by Table 7.8, a notable increase in China's gross savings [see the discussion in Ma and Wang (2010)] and its gross export and import shares between 1995 and 2005 are evident, as is an expanding net export position and a significant widening of the current account surplus (noting the latter is the difference between the gross savings share in Table 7.8 and the gross capital formation share in Table 7.7).

The strong compositional trends evident in the 1995–2005 period reversed course between 2005 and 2014, with the notable exception of the gross savings share. The reflection of the high savings in Table 7.7 was the still very high investment share of expenditure in 2014 and a rising construction share in value-added from 2005 to 2014. Elsewhere, the decline in the export and import shares was partially reflected in a decline in the share of secondary activity (excluding construction) in value-

added, with services activity, much of which is non-traded, the principal beneficiary of that.

The global backdrop to these trends was of course the rise of the "global imbalances" phenomenon (McKay and Song 2010), which was endogenous to the world-system dynamics that led to the GFC of late 2008 and early 2009, and the long, slow recovery in the advanced world that unfolded in its wake, as large external imbalances were replaced by extremely pronounced internal ones. In the current account deficit countries, such as the USA and Spain, that meant a narrower external deficit but high unemployment, falling house prices, and major fiscal problems. China's response to this negative demand shock was to launch a spectacularly large fiscal and monetary stimulus as the first line of defence (McKay 2011). Once the world economy regained some sense of normality in the early 2010s, the ongoing attempt to smooth the inevitable slowdown in export growth and a move to a quasi-permanently lower capacity utilisation rate as global imbalances corrected, while also dealing with the real and financial legacies of the stimulus era at home and periodic bouts of instability abroad, would have challenged the skills of any set of leaders (McKay 2011).

The task of continuing to manage those legacies while simultaneously shaping the nature of China's next strategic kink was an intimidating one that ultimately fell to the administration of Xi Jinping, who has emerged as the superordinate influence on Chinese national strategy.

7.8 Conclusions

This chapter has set out the contours of China's remarkably successful turn towards an outward-oriented industrialisation strategy since 1978 up to the ascent of Xi Jinping. Strategically speaking, China spent the majority of the post-1978 period in the highly desirable first quadrant, with its domestic economy growing much faster than the frontier and its export market share increasing consistently. The major phases of the post-1978 era—reforms without losers in the 1980s; the Tiananmen interregnum; reform with losers in the 1990s; the spectacular ascent of the period between WTO accession and the GFC; the diminished expectations of the post-GFC world—each presented the leadership with strategic challenges. However, ultimately it has been the ability of the Chinese people to grasp the strategic opportunities available to them that has defined the three decades or so of the reform era that had passed by the time Xi ascended. That is why the nation's strategic pathway seldom deviated from a 45-degree trajectory passing through the first quadrant. The moment of greatest risk in this regard—the Tiananmen interregnum, where an anti-strategic lurch was a genuine threat—was eventually turned to advantage by Deng's decisive

intervention on the side of a renewed engagement with openness and the industrial GST.

In addition to the strategic narrative, a detailed examination of China's international engagement since 1978 was conducted. This discussion presented evidence that China has been undergoing a process of dynamic substitution in its international trade. As this phenomenon was evident in the strategic pathways of other nations that have successfully pursued outward-oriented industrialisation, it was important to gauge both whether it was also underway in China, and if it was, how mature was the process. It was shown that the process still had some time to run at the end of the Hu-Wen era.

The chapter concluded by discussing the broad parameters of Chinese industrialisation in the reform era, highlighting positive changes in investment efficiency, sectoral structure, and the depth of international engagement. However, the lack of reform in the 2000s, and the unbalanced nature of the high-speed growth that emerged in this decade, amplified by a colossal stimulus package in response to the GFC, left some complicated legacies for the successor's to Hu-Wen. As it happened, what began as a conventional Xi-Li administration progressively became the Xi era, and with the benefit of 10 years of hindsight, it is now appropriate to talk of Xi's inheritance, in the singular. And that is the topic of the next chapter.

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Chapter 8
The Xi Inheritance

8.1 Introduction

The objective of this chapter is to clearly set out the system that Xi inherited as leader of the People's Republic of China. This builds on the narrative of Chap. 7, and is an essential stepping-stone prior to assessing the actions of his post-2012 administrations.[1]

The success of China's outward-oriented industrialisation strategy since 1978 had, up to the early 2010s, been mainly a process of overcoming the problems of a low-income transition economy. The challenges confronted by a mixed, middle-income economy—i.e. the China of Xi—are of a different nature. Add to these traditional challenges the legacies of the Hu-Wen era, the new complexity of overt Great Power rivalry, China's unique demographics, the political-economic contradictions specific to China's circumstances, as well as the requirement to address climate change, and it is clear China's leadership has faced—and is facing—a very complicated set of choices and potentially fateful strategic—and possibly anti-strategic—trade-offs.

At the outset of the Xi era, there was considerable debate about China's ability to adopt a new sub-strategy in a timely fashion prior to the exhaustion of the old one. This discourse was intimately related to angst about escaping the "middle-income trap" (Fung and Yao 2014; Woo 2012; McKay 2016); to the desire for "rebalancing" (McKay and Song 2012); the theme of "looking inwards" for growth (Tyers 2012); optimising urbanisation (McKay and Song 2012) and the much-vaunted rise of the

[1] In the early years of Xi's first term as President, Premier Li was a much more prominent figure, especially on economic matters. Therefore, it is fair to describe a "Xi-Li" administration at this time. Xi's second term has been different, with the rise of small leading groups led by Xi and direct allies somewhat side-lining the Premier, even in traditional portfolio responsibilities. So, while Li will be quoted in this chapter in the context of policy formation, it is important to recognize that his political power waned over the 10 years of his Premiership. He was also surprisingly forced into retirement after the 20th CCP Congress.

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H. McKay, *The Strategic Logic of China's Economy*, Contributions to Economics,
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Chinese consumer middle class (Farrell et al. 2006; Kharas 2010; Li 2010; McKay 2014c, 2015).

China's economic structure in the early 2010s was characterised as both over-industrialised and under-urbanised relative to its level of income per head (McKay and Song 2013) after the frenetic growth of the Hu-Wen era. In addition, it was highly open and export-oriented for a large economy (ibid). It was also clearly experiencing a trend slowdown in economic growth, with the real growth rate in 2014 (7.3%) being approximately half of that achieved in the post-WTO entry peak year of 2007 (14.2%). The nominal growth rate had declined by even more, with the 2014 rate (8.2%) being slightly more than one-third of the 2007 outcome of 23.1% (Recall that within the dynamics of the *Strategic Alternator*, what matters is the combination of volumetric expansion and the strategic price level). The current account surplus for 2014 of 2.1% of GDP was just one-fifth of its peak level of around 10% of GDP. The efficiency of marginal investment outlays had also declined considerably, as evidenced by the doubling in the incremental capital-to-output ratio since 2007 (see Fig. 7.9 and the discussion of investment efficiency in the previous chapter). Income equality was also emerging as a pressing issue, alongside more visible high-level corruption (Grant et al. 2012). From every angle, it was becoming clear that China's historical strategic mix was becoming less remunerative. It was clearly time for the economy to begin transitioning away from the model that had carried the society from low to middle-income status over the three and half decades or so from 1978. In short, to continue advancing towards the core of the world-system China required a new sub-strategy within the confines of engagement with the industrial GST.

The underlying substance of this next kink in China's strategic pathway—the design of its "new growth model" (Garnaut et al. 2013; McKay and Song 2013)—would need to respect the system's major structural legacies if the transition was to be a smooth one.

The characterisation that China was both over-industrialised and under-urbanised relative to its level of income per head is critical. The "over-industrialised" assessment reflected the high proportion of gross value-added accounted for by secondary industry relative to middle-income peers through time; and the "under-urbanised" assessment reflected the fact that the policy framework had prevented internal rural–urban migration from progressing at the rate at which push and pull motivations alone might have predicted (Song and Sheng 2005, see discussion in Chaps. 6 and 7). Furthermore, the absorptive capabilities of the urban household population were limited by the underprivileged position of the migrant worker cohort and high levels of precautionary saving among urban *hukou* households. China thus had both a considerable overhang of industrial capacity (and of liabilities that had financed the excess) and considerable latent demand for further urbanisation, alongside huge potential for generating greater benefits from the degree of urbanisation already achieved. The resulting distribution of income within the economy was also far from equal (Wang and Woo 2011). The deleterious environmental consequences of rapid industrial expansion were also becoming a major public issue, as famously chronicled in Chai Jing's *Under the Dome* documentary, released in 2015. This

was the broad set of risks and opportunities that confronted both the political leadership and the nation's entrepreneurs at the time of Xi's ascent and through his first term.

Some aspects of this inheritance were obviously impediments to sustaining growth in aggregate living standards in an environmentally conscious way while simultaneously promoting equality of income and opportunity. Others were advantageous for the pursuit of these basic societal goals. Transitioning the economy in a direction that reduced over-industrialisation and optimised urbanisation, while increasing domestic household absorption and remaining on the dynamic substitution path in international trade would emphasise the positive aspects of the inheritance and de-emphasise the negative aspects. Successful policy interventions conceived in this spirit could progressively work to reduce pronounced income inequality and the environmental impact of over-industrialisation.

It was thus theoretically possible that the overall policy response to these major questions—both the threats and opportunities—could have been inherently complementary. Policy decisions and strategic guidelines issued in the mid-2010s indicated that the new administration understood the need for a new model very well and they had a broad idea of what ought to be done to engineer it. Yet the leadership was far from over-confident in its early years, being fully cognisant of the political-economic risks and the scale of the structural legacies that needed to be surmounted. Indeed, the State Council memorandum on income distribution reform (quoted in Xinhua News 2013a), which cut across all relevant aspects of macroeconomic decision-making, released on 5 February 2013, stated that "deepening the income distribution reform is a systematic project that is arduous and complicated and concerns the reallocation of various interests. There is no way to accomplish it overnight".

This chapter will present evidence in support of the characterisation of China's current and historical economic structure as both over-industrialised and under-urbanised relative to its level of income per head, while also presenting evidence on income inequality and export orientation. This discussion sketches China's path to the present in actual and comparative terms as well as defining the structural starting point as Xi came to power. The importance of defining this starting point very carefully cannot be overstated. A misdiagnosis of the nature of the leadership's inheritance would surely lead to a misguided reading of policy initiatives launched in response.

The first section of this diagnostic discussion revolves around a broad snapshot of socio-economic characteristics at the income per capita milestones of $US2,000 and $US8,000 per head. This construct dovetails neatly with both China's jumping off point in the post-financial crisis era and the CCP's proclivity for targeting manifold increases in key development indicators over one- and two-decade horizons (Lin 2006; McKay and Song 2013).

The second section outlines the policy and political-economic parameters that over time created the imbalances that Xi inherited, with a brief normative discussion on what an incoming administration might do to mitigate or correct them as a means of sponsoring the strategic tilt that the Chinese economy clearly required at the time of Xi's ascent. What Xi actually did, and what that means for the future strategic mix

and China's ultimate pathway within the world-system, will follow in Chaps. 9 and 10.

8.2 China's Historical Industrialisation Path in Comparative Perspective

In 1995, China achieved the $US2,000 per capita level for purchasing power parity GDP in 1990 international dollars. In 2011, the year before Xi's ascent, it reached the $US8,000 per capita threshold, quadrupling the size of its economy per head in just 16 years.[2] Leaving aside for a moment the speed at which this increase in living standards was achieved, which was indeed remarkable, merely attaining a fourfold increase in living standards from a base of $US2,000 per head is a highly commendable feat for any late industrialising economy in the post-Second World War period, regardless of timing. It is also somewhat rarer than one might expect. Some of the notable nations in the Asian region that have not yet achieved this benchmark (although they may do so in the foreseeable future) despite some sustained periods of impressive economic growth are Indonesia, India, the Philippines, and Vietnam. Given the relative exclusivity of the "club" that China gained membership to in 2011, it provides a neat guide for a comparative analysis of industrialisation and development patterns around the Asian region and around the world. Accordingly, Fig. 8.1 and Table 8.1 present a sample of economies that share this distinction with China to conduct a peer review of the broadest contours of its development drive as it progressively deepened its engagement with the GST.

Before we enter into that discussion, let us back turn for a moment to the relative speed at which China executed its quadrupling of living standards. Consider Fig. 8.1 (which is also Fig. 1.2). The columns represent the number of years each economy took to achieve the quadrupling feat. The line represents the compound annual growth rate recorded during the relevant period. China is the most recent country in the sample to attain the baseline income level; it also achieved the fastest compound growth rate; and it accordingly required the least amount of time to increase living standards fourfold. Japan comes next, followed by the group of four precocious late industrialisers now known collectively as the NIEs, and ASEAN members Thailand and Malaysia. Two economies from outside the East Asian region—one from the Old World (Turkey) and one from the New (Mexico)—bookend an estimate of the experience of the world economy in total, before the

[2] All information on post-World War II GDP and GDP per capita levels reported in this chapter are based on the Conference Board's Total Economy Database™ as issued in January 2012, which is available from http://www.conference-board.org/data/economydatabase/. Data for before 1950 and the world economy as a whole comes from Maddison, Angus, 2009, *Historical Statistics of the World Economy: 1–2006 AD*, March update, available from http://www.ggdc.net/maddison/. All underlying data are 1990 Geary Khamis dollars.

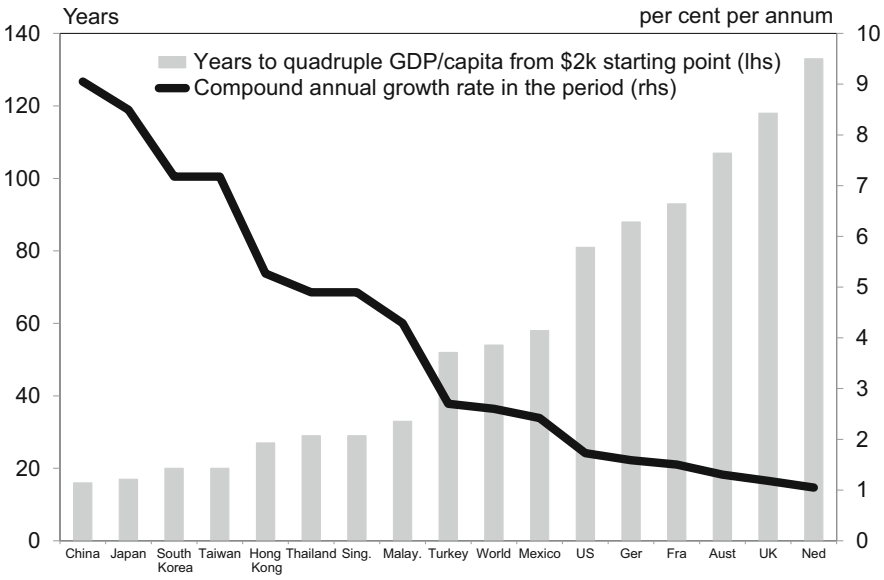

Fig. 8.1 [also 1.2] Quadrupling living standards from a base of $US2,000 per capita. Source: As for Fig. 1.2. Originally published in McKay and Song (2013, Fig. 5.1, p. 77)

figure moves on to the first- and second-generation of European industrialisers and their colonial offshoots on the right-hand side of the chart space.

Table 8.1 indicates the year in which the countries in Fig. 8.1 first reached the baseline level of $US2,000 GDP per capita, going back to the Netherlands in 1827. It also shows when the quadrupling of living standards was completed. The first generation of industrialisers (here represented by the UK and the Netherlands) took well over a century to do so, expanding at a compound rate of around 1–1¼ percent per annum, while the second generation (here represented by France, Germany and the USA) achieved long-run growth rates of around 1½–1¾ percent per annum. That enabled them to complete the task in an average of 87 years. The availability of national accounts data grew significantly after the Second World War. So too did the incidence of modern economic growth, underpinned by the dissemination of the industrialisation meme.[3] Five of the 16 economies listed in Table 8.1 were on the $US2,000 GDP per head "starter's blocks" in the early 1950s: Japan, Turkey, Mexico, and the *entrepot* city-states of Singapore and Hong Kong. The world economy as a whole, if treated as an independent region, was also in that

[3] Bénétrix et al. (2012, pp. 6–7) make a practical observation on the availability of historical time series of industrial output. They argue that the availability of data is itself an indicator of industrialisation, as a poor country without an industrial sector of note would not go to the trouble of computing such statistics. That is certainly a "reasonable surmise", as they put it. See the discussion in Chap. 6 in relation to the timing of the entry into industrialisation in China and Japan.

Table 8.1 Quadrupling living standards from a base of $US2,000 per capita

Contemporary country or administrative region	Year achieved $2000 GDP per head	Year achieved $8000 GDP per head	Number of years to quadruple GDP per head	Compound annual growth rate in period
Netherlands	1827	1960	133	1.0
UK	1839	1957	118	1.2
Australia	1848	1955	107	1.3
USA	1860	1941	81	1.7
France	1869	1962	93	1.5
Germany	1874	1962	88	1.6
Mexico	1950	2008	58	2.4
Hong Kong	1950	1977	27	5.3
Singapore	1950	1979	29	4.9
Japan	1951	1968	17	8.5
Turkey	1955	2007	52	2.7
Taiwan	1965	1985	20	7.2
South Korea	1969	1989	20	7.2
Malaysia	1969	2002	33	4.3
Thailand	1976	2005	29	4.9
China	1995	2011	16	9.1
memo item				
World	1950	2004	54	2.6

Source: See Footnote 2. Originally published in McKay and Song (2013, Table 5.1, p. 78)

category. Maddison (2009) estimated that global GDP per capita was $US2,111 in 1950, modestly higher than the $US1,958 at the onset of open hostilities in Europe.

Moving forward to the 1960s, Taiwan (1965) and then South Korea and Malaysia (1969) reached the jumping off point, just as Japan was completing its drive to $US8,000 (1968). Thailand reached the jumping off point in 1976. This group (excluding the special cases of Hong Kong and Singapore) of successful post-World War II industrialisers is a natural peer group for post-1978 China. As Japan was the first nation among the group to quadruple per capita income, and its strategic pathway has been explicated at length in Chap. 4, it is the obvious *numeraire* for the comparative analysis. In Fig. 8.2a and b, Japan is set at 100 for every indicator (producing a regular hexagon) and other countries are reported as a percentage of the Japanese level. For example, when Japanese GDP per head was at $US2,000 in 1951, its urban population share was 53%. When China's GDP per head was at $US2,000 in 1995, its urban population share was 31%. China's urban population share is accordingly represented as 58.5% of the Japanese level in Fig. 8.2a.[4]

In addition to the two major areas of interest in terms of the stylised facts relating to China's contemporaneous structure—industrial production as a share of total

[4]The arithmetic is (31 ÷ 53)*100 = 58.5%.

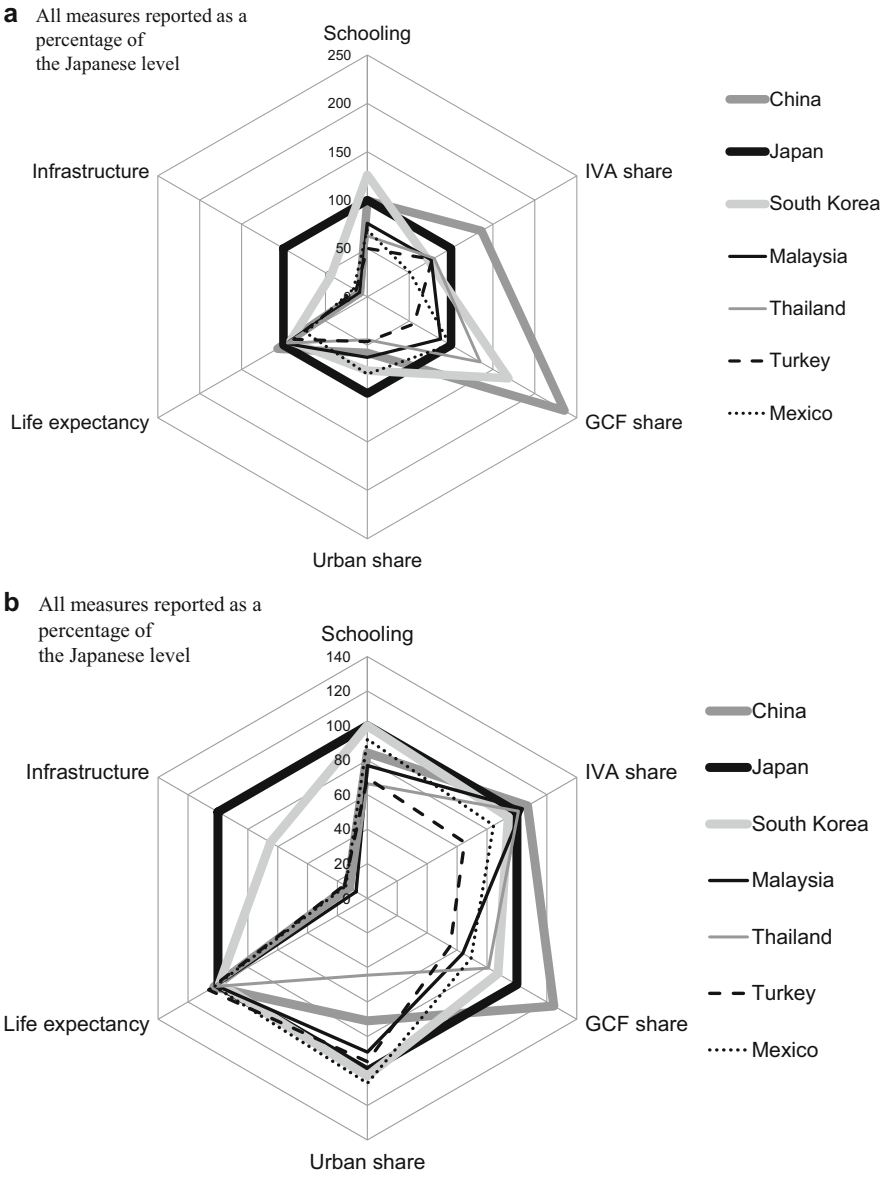

Fig. 8.2 (**a**) Selected characteristics of successful future industrialisers at the $2000 per capita level. Source to figure **a** and **b**: These figures were originally published in McKay and Song (2013, Fig. 5.2a and b, p. 80). Notes to this figure **a** and **b**. "Schooling" refers to average years of schooling per adult. The source is the UN Development Program (2013), available at http://hdrstats.undp.org/en/indicators/103006.html. "IVA share" and "GCF share" refer to the percentage of GDP accounted for by industrial production and gross investment, respectively. The source is the World Bank's databank, available at http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=world-development-indicators. "Life expectancy" is at birth. "Infrastructure" is open rail network length scaled by 2010 land area. Land area comes from the CIA (2012) World

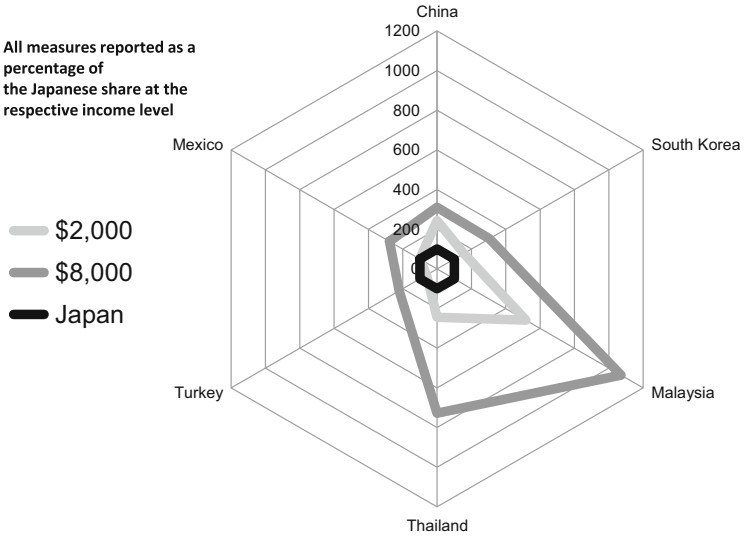

Fig. 8.3 Export orientation at both $US2000 and $US8,000 PPP GDP per capita. Source: Exports of goods and services as a share of GDP, sourced from the World Bank's databank, available at http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=world-development-indicators

output and the urban population as a share of the total—a range of other indicators have been added to provide a richer view. These additional variables include proxies of human capital quality (average years of schooling for adults) and depth of infrastructure (rail network length scaled by land area), in addition to life expectancy and the investment share of GDP. Export orientation is also considered, but relative scale factors make it difficult to represent in the same graphical framework as the variables considered above. As a consequence, trade orientation is depicted separately in Fig. 8.3.

Arguably the most striking finding from Fig. 8.2 is China's very high IVA and investment shares at the starting point of the analysis. Its investment share far exceeded all other economies in the sample and its industrial production share likewise. It was very close to its peers in terms of schooling and life expectancy, but it was weak in terms of infrastructure and well behind its North Asian neighbours

Fig. 8.2 (continued) Factbook, available at https://www.cia.gov/library/publications/the-world-factbook/index.html. Rail network length is from Mitchell (1992, 1993), Union of International Railways (1991, 2001), the CEIC database, and the CIA World Factbook, with interpolations by the author. "Urban share" is the percentage of the population classed as urban by the UN in their 2011 revision. Sourced from http://esa.un.org/unup/. (**b**) Selected characteristics of middle-income industrialisers at the $US8,000 per capita level. Source and notes: See Fig. 8.2

in terms of urbanisation. China's export orientation was much higher than that of Japan, Mexico, or Turkey at the $US2,000 per head level, somewhat higher than that of South Korea, similar to Thailand but much lower than Malaysia.

Moving forward to the $US8,000 per head snapshot (Fig. 8.2b), the initial impression is that there is a much greater degree of similarity between the economies in the sample at this stage of development that at the $US2,000 per head jumping off point. The main exception is in infrastructure, where Japan remained far ahead of the rest of the group, reflecting its long-running participation in the industrial GST dating back to the nineteenth century, as documented in Chap. 4.

As for China itself, its raw relative rankings on most indicators remain similar to those seen at the $US2,000 per head level, but it looked less extreme in terms of investment share and IVA as a share of total output, although it still led in both categories. Also, the degree to which it was lagging in terms of urbanisation declined, but it was still some way behind the levels established elsewhere in North Asia. The decline in its lead in investment and industry was a result of rising shares in other countries, as China maintained very high levels in absolute terms. The improvement in China's relative standing in terms of urbanisation was a function of rapid increases in China and less rapid gains elsewhere as their drives matured.

As for export orientation (see Fig. 8.3), China's relative export share changed less between the two snapshots than in any other nation in the sample. In level terms it retained a substantially greater exposure to foreign demand than the large economies in the sample (noting that Mexico's participation in the North American Free Trade Agreement (NAFTA) saw it narrow the gap to a degree); while South Korea caught China from well behind; while the two ASEAN economies moved far ahead.

This short empirical investigation clearly shows that the characterisation of China's economy as simultaneously over-industrialised, under-urbanised, and more export-oriented than is usual for large economies—all relative to development level—was still valid in the 2010s, just as it was in the 1990s. That was despite rapid urbanisation in China over the preceding two decades and rapid increases in the IVA and investment shares of output, and in the export orientation of sales, in other successful industrialisers in the post-Second World War period.

To summarise, as of 2011, at a GDP per capita level of around $US8,000, China was less atypical than it was in 1995 as a $US2,000 per head economy, but it retained a highly distinctive structure that had major implications for strategic design in the coming phase of its development.

Turning to income distribution, which is a joint function of economic policies, political activity, and social structure, China has unfortunately been keeping poor company. Figure 8.4 depicts the World Bank's estimates of Gini coefficients of income equality for a broad range of economies in 2020, or failing that, the most recent observation, paired with each nation's living standard relative to the frontier. For China specifically, a time series from 1996 to 2019 is plotted. The data shows that between 1996 and 2010 China followed the trend line. Between 2010 and 2015 Chinese inequality fell well below the trend, and it has remained there since. This may be evidence of skilful policy-making, a lucky structural break, or it may reflect mismeasurement. Wang and Woo (2011) make a compelling case that the World

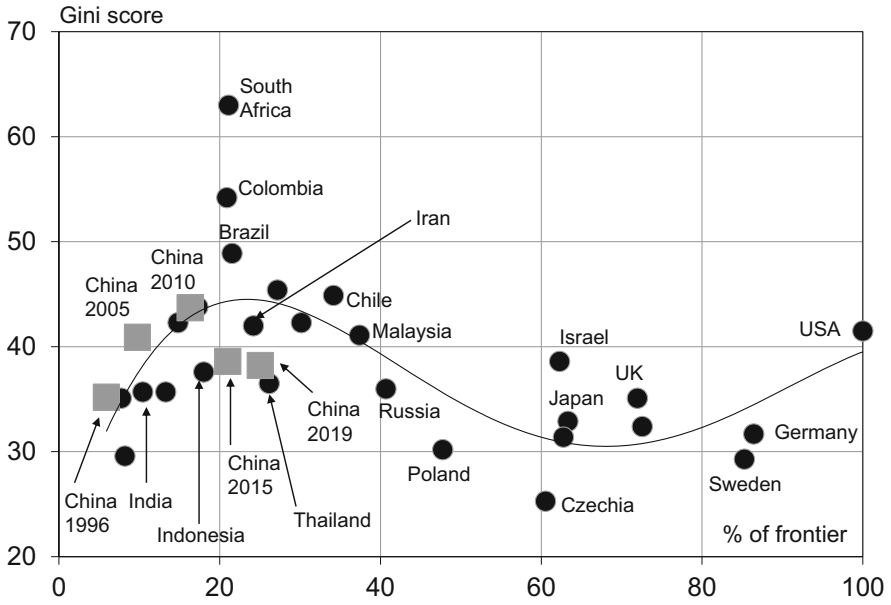

Fig. 8.4 Income distribution in selected economies: 2020 or latest. Source: Gini coefficients from World Bank's World Development Indicators. See further explanation in text. The trend line, which depicts a Kuznets-type upside-down U-shaped relationship (Kuznets 1955) for most of the sample, is estimated by the author

Bank estimates and those of the Chinese statistician have been too low. Therefore, the way to interpret the relativities in Fig. 8.4 is that China is at least as unequal as it appears, but is probably more so. That is only a genuinely troubling observation if the mismeasurement is egregious, and China's true position is well above the trend line, rather than close to it. Cross-country studies highlight the difficulties faced at the middle-income level by societies with unduly unequal income distributions; and the relative successes of East Asian societies that have embarked upon this stage of their development with a relatively flatter distribution of income (Fung and Yao 2014; Wang and Woo 2011; Wang and Zhou 2014). For China, it remains too early to tell how much of its historically unequal distribution of income is endogenous to welfare-enhancing aspects of the development process, and how much is due to distortions in the system and the accrual of rents and associated vested interests that will ultimately be growth limiting.

8.3 Policy Parameters as Xi Ascended and the Historical System

The previous section offered a comparative analysis of the high-level changes in the Chinese economy between the GDP per capita levels of $US2,000 and $US8,000, with the latter level achieved just in advance of Xi's first term as leader. With the basic characterisations of "over-industrialised" and "under-urbanised" derived from the above analysis, it is time to consider the policy and incentive frameworks that generated these outcomes. This in turn will define the starting point for considering the major policy initiatives of the Xi era to date, and those that might be enacted to tilt China's sub-strategy in a sustainably remunerative direction.

In the introduction to an edited volume tackling the rebalancing theme, McKay and Song (2012, p. 2) wrote that "...the pursuit of "balanced" economic growth is best thought of as a broad policy objective that aims to limit risks to growth and to mitigate the negative impact on welfare. It should therefore not be expressed as a particular target, such as a reduction in the current account surplus or a rise in the labour share of income. The role of policy should be to design and implement a framework that reduces distortions, encourages and rewards innovation, equalises access to education, employment, a social safety net, and capital for investment, while minimising rent-seeking opportunities. The desire to achieve such an environment will create demand for institutional reforms that can facilitate these processes of structural change in the least disruptive fashion".

The proposals advanced below are put forward in that spirit, but with an overt rather than implicit overlay of the DST.

To stylise heavily, China's over-industrialised state in the early 2010s was a result of a complex array of price and incentive distortions that worked over many decades to prioritise industrial development, both heavy and light, both domestically consumed and export-oriented, over other potential uses of resources. These distortions pervaded both the real and financial spheres of the economy and ultimately led to an unbalanced underlying structure. Key factor input costs—labour, land, energy, and capital, plus the pricing of external diseconomies such as environmental degradation—were historically suppressed (Huang and Tao 2010), even as the markets for commodities were substantively liberalised. These distortions artificially raised the return on investment, thereby encouraging capital accumulation and saving over consumption. They also elevated international competitiveness through the suppression of factor input costs. The result was a continuously high share of IVA in total output; an unusually high share of capital formation in total expenditure; unusually high gross savings across the three key institutional sectors (Ma and Wang 2010); unusually low expenditure shares for household and government consumption; an unusually high export orientation for a large economy; and excess production capacity in a range of industrial sectors.

China's under-urbanised state in the early 2010s was the direct result of an overall policy framework that prevented internal rural–urban migration from progressing at the rate at which push and pull motivations alone would have predicted (Song and

Sheng 2005). The direct discrimination practised against migrant workers under the *hukou* system (Song et al. 2010a, b; Watson 2009), uncertainty over rural land tenure and a range of socio-economic factors that indirectly derive from *hukou* served as effective barriers to unfettered rural-to-urban migration and systematic participation in off-farm work (Démurger 2012).

Despite the distortions noted above, the stock of migrant workers was still very large in absolute terms, numbering 253 million people in 2011 according to Watson (2012, Table 12.1, p. 282). Migrant workers and their families though were not yet full participants in the lifestyle enjoyed by non-migrant urban residents (Meng 2000, 2013). An obvious over-riding policy objective for the Xi administration at the time of his ascent would have been to optimise urbanisation. At the heart of this concept would be a desire to converge the living standards of this large but still highly underprivileged group with those of the rest of China's urban citizens.

Some remarks made by Premier Li Keqiang in 2013 reported by official news agency Xinhua (2013b) were clearly in sympathy with the above constructs. Speaking at a macroeconomic seminar on 12 April 2013, which brought together policymakers, scholars, and industry representatives, Li stressed that the deepening of reform was vital to the sustainability of growth and that any counter-cyclical efforts would be considered in the context of their longer-term structural implications and their impact on the reform path. The exact reporting was as follows:

"While effectively coping with short-term problems and *maintaining reasonable growth, more efforts should be made to improve the quality and benefits of development*, with a focus on promoting economic restructuring and upgrading, expanding employment and increasing people's incomes, he said". "He said the impetus for sustained development lies in deepening reform, *urging targeted policies to cure not only 'symptoms' but deeply-rooted problems* in the Chinese economy". "If interim measures have to be carried out, *they should not set up barriers for promoting market-oriented reform and development in the future*, he said" (Italics by the author). Furthermore, the Third Plenum of the 18th CCP Congress, held in November 2013, decreed that the market would henceforth play a "decisive role" in the allocation resources ("Market to play "decisive" role in allocating resources: communique" 2013).

To take those principles and make them more practically actionable, a little taxonomy is desirable. Measures and recommendations can be usefully divided into those that (a) directly tackle specific distortions that create rents and skew resource allocation (for instance, energy pricing), (b) those associated with addressing asymmetric opportunities available to various societal segments that lead to and inflame imbalances (for instance, the pension system), and (c) those that seek to contain macroeconomic risks, or enhance macroeconomic benefits, in a more general way (for instance, financial system reform).

Huang and Tao (2010) put forward the proposition that the unbalanced economic structure that Xi was about to inherit can be ascribed to what they term "asymmetric market liberalisation". They argued that while the goods market was predominately liberalised in China by the end of the 2000s, factor market liberalisation had lagged behind. So, in terms of the "decisive role", the market has already assumed such

Table 8.2 Producer subsidy equivalents of factor market distortions in China, 2000 to 2009 (percent of GDP)

	Land	Labour	Capital	Energy	Environment	Total
2000	0.5	0.1	4.1	0.0	3.8	8.5
2005	1.3	2.4	3.0	1.7	3.0	11.4
2007	1.2	3.2	3.6	1.6	2.4	12.0
2009	0.9	2.7	3.5	0.7	1.8	9.6

Source: Huang and Tao (2010, Table 1)

status in goods, but not so in key factors markets. Huang and Tao (ibid) produced estimates of producer subsidy equivalents emanating from a range of factor market distortions at an annual frequency between 2000 and 2009. A summary of their results is reported in Table 8.2. This is a good place to move from the general to the specific.

The estimates of Huang and Tao (ibid) showed that material distortions still existed in the "markets" for labour, land, capital, energy, and the environment as Xi was coming to power. Each of these distortions served to lower input costs for business versus the counterfactual cost base, allowing the estimation of an (admittedly crude) "producer subsidy equivalent" in each area. These advantages led to greater international competitiveness and profitability in many sectors, a loss of consumer surplus in some instances and a lower labour share of national income in the aggregate. Combine these subsidies with the existence of material market power at the "commanding heights" of the domestic economy (Tyers 2012) and the profit share of some sectors can become unnaturally high.

These excess profits came at the expense of the providers of the good or service whose output price was suppressed, which is in essence an inter-sectoral transfer. It is principally migrant workers who were disadvantaged by suppressed labour costs; it was the indigenous private sector that was disadvantaged by the lack of access to finance from the formal banking sector; it was upstream and midstream energy suppliers who were disadvantaged by suppressed costs to final users; it was the community of domestic savers who were disadvantaged by the suppressed cost of capital and financial repression more generally; it was the Chinese and global commons, then and into the future, that suffered from the lack of effective pricing of negative externalities such as environmental degradation; it was foreign competitors of Chinese firms who were disadvantaged by the competitive edge bestowed by the suppressed cost base in China. Further, intra-sectoral distortions, such as preferential treatment for state-run or certain foreign invested firms, also served to skew economic outcomes, as not all Chinese businesses are equal in terms of their access to cheap factors (especially land and capital), and barriers to entry in many key sectors create and protect additional sources of rents for powerful incumbents.

8.3.1 Energy and the Environment

Approaching arguably the most transparent distortion first, a move towards market-based energy pricing for end users of electricity and petroleum products could have been an immediate priority for Xi. Moving towards a system that priced negative externalities, thus endogenising a portion of the cost of environmental degradation into the bottom line of business, was a further obvious area for reform. Huang and Tao argued that the combined "prize" of reform in these areas—the reversal of 2009 levels of producer subsidy equivalents—was around 2½ percent of GDP annually.

8.3.2 The Cost of Capital and the Reform of Domestic and International Finance

Addressing the distortions associated with capital—where the direct "prize" was close to 3½ percent of GDP in 2009 and the total prize in terms of macroeconomic stability was arguably considerably larger in the long run—required a multi-faceted approach. Disentangling the complex web of the many tiers of the banking system, shadow finance, exchange arrangements, and the exchange rate-monetary policy regime is no simple matter. It is not just that capital had been too cheap for certain large firms. Historically households had been poorly remunerated on their savings as a consequence of low regulated deposit rates. A lack of financial market development and exchange arrangements that disallowed personal outward portfolio flows provided a limited menu of alternative investment options (McKay 2007, 2014c, 2015). Small private firms often paid extremely high interest rates in the informal market (Walter and Howie 2011; Zhang 2014). Exporting and import-competing firms had been advantaged historically by the competitive exchange rate, raising their orientation towards tradable output, while international purchasing power has been disadvantaged by it, lowering domestic absorption and the capability of firms to acquire desirable foreign assets (at least since the "Go Out" policy was announced in the late 1990s).

It is possible to infer a relationship between macroeconomic stability, income per capita, and financial reform. The Xi administration was no doubt wrestling with the various trade-offs encapsulated in this area as they came to power. An abstract conception of this relationship is depicted in Figs. 8.5 and 8.6. Turning first to Fig. 8.5, the vertical axis which measures the state of macroeconomic stability (broadly defined, but best thought of as circumstances under which strategic confidence registers at a robust fundamental level). The horizontal axis measures the degree of financial repression (McKinnon 1973) or freedom that is prevailing. Within the chart space, five zones (the circles) are identified that hypothesise a link between income per capita levels, macroeconomic stability, and financial repression or freedom. The two zones in the top left and top right-hand corners of the chart space are not controversial, linking the desirable state of "high"

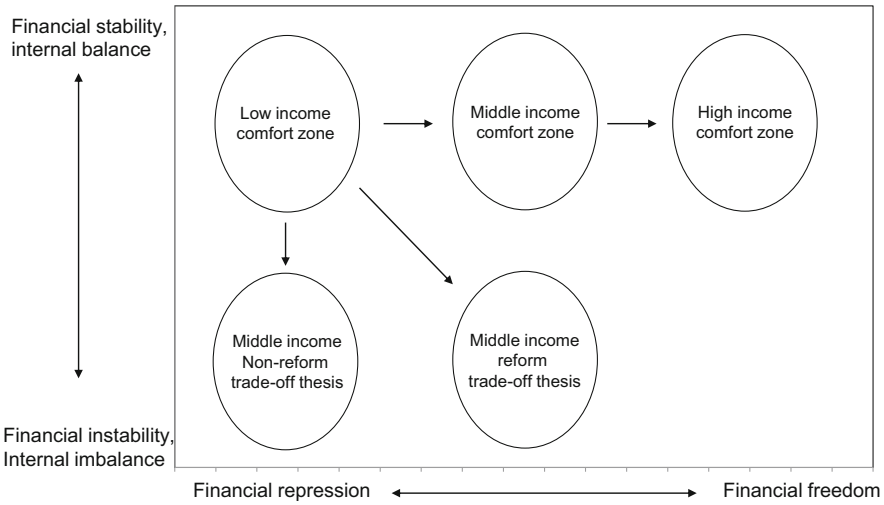

Fig. 8.5 Stability, income level, and financial repression or freedom. Source: Author's own conception

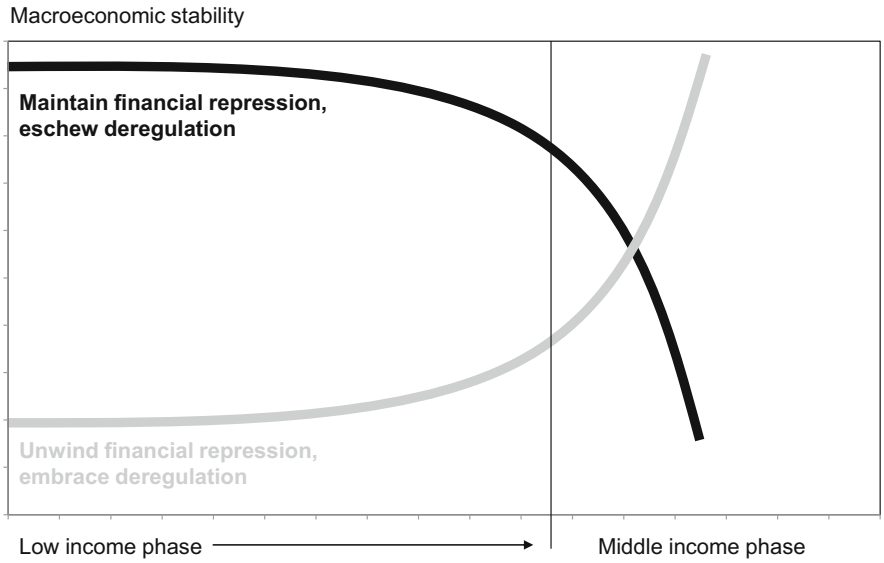

Fig. 8.6 The middle-income non-reform trade-off thesis. Notes to Figs. 8.5 and 8.6: Author's own conception. Earlier versions of Fig. 8.6 were published in McKay (2014b) and McKay and Song (2013)

macroeconomic stability to various degrees of financial repression or freedom: fully free at high income and fully repressed at low income. The remainder of the chart space is contested ground.

The Washington Consensus is represented by the circle that sits between the first two discussed, which implies a benign linear path for macroeconomic stability throughout parallel financial reform and development processes. The Washington Consensus arrived at this somewhat naïve and ahistorical position as it is "largely based on standard efficiency arguments, employing a conventional neoclassical model and ignoring the special ways in which financial and capital markets differ from markets for ordinary goods and services" (Stiglitz 2000, p. 1076).

Critics of the Washington Consensus contend that there is no evidence of a positive relationship between financial deregulation and macroeconomic stability in developing economies and the relationship could well be negative (Stiglitz 2000). No doubt there are many influential people in Beijing who agree with Stiglitz's reading of the empirical record. In terms of the Xi inheritance, with the damage inflicted on the world-system by an under-regulated US financial sector in the GFC still fresh in the memory in the early-to-mid 2010s, scepticism that Western models were worth replicating without question would presumably have been high.

Those asserting that the relationship between financial deregulation and macroeconomic stability in developing economies is negative and generalisable are represented by the circle labelled "middle-income reform trade-off thesis".

The final zone, positioned in the lower left-hand corner, is labelled "middle-income *non*-reform trade-off thesis". This idea asserts that there is a negative relationship between macroeconomic stability and the maintenance of financially repressive policies for too long once an economy is clearly in the middle-income phase of its development (McKay 2014a). This position agrees with the view that if aggressive financial deregulation occurs too early in an economy's development process, it is likely to engender instability. Yet it distinguishes between middle-income economies and the rest of the developing world, as the efficiency arguments put forward by orthodox economists become more relevant as a country gets closer to the point at which it begins behaving more like a high-income economy (as it begins to compete directly against the strategic core of the world-system across a range of activities) than like its former low-income peers (who it does not directly compete with anywhere near as much as before).[5]

Translating the above hypotheses into the terminology of this work, there is little strategic demand for high-income-like institutions during the low-income phase of economic development. Such demands first emerge during the middle-income phase, as pioneers seek to break out into more advanced activities, following a process of dynamic substitution. Requiting the demands of these pioneers in a timely fashion is a vital task of the strategic leadership of middle-income economies actively engaged in the industrial GST.

[5] An empirical test of the impact of financial repression at different stages of China's reform period reported in Huang and Wang (2011) suggested financial reforms assisted growth through efficiency gains in the 1980s and 1990s but these benefits waned in the 2000s, with efficiency losses from the SOE–state-owned banking nexus important in this regard. It is important to note that the indexes of financial repression the authors use in this test imply very gradual reforms, not the abrupt liberalisation hypothesised in the text.

The second graphic covering this important issue (Fig. 8.6) is a schematic diagram that illustrates the dynamics underlying the "middle-income *non*-reform thesis". Here the vertical axis is unchanged from Fig. 8.4, but the horizontal axis is now divided into two parts—the low- and middle-income phases of development.

The dark curve depicts an abstract concept: the degree of macroeconomic stability the economy will experience at each income level were it to *eschew financial repression and to deregulate finance*. The lighter grey curve depicts the degree of macroeconomic stability the economy will experience at each income level were it to *embrace financial repression and to eschew deregulation*. The black curve implies that financial deregulation induces instability during the low-income phase, while the grey curve implies that financial repression is stability enhancing at the same point. However, once the middle-income threshold is reached, the curves shift abruptly from their horizontal journey through the low-income field, crossing in the meantime. This implies that at middle-income levels, financial repression begins to become a source of instability; while deregulatory moves have a positive effect on stability.

The logic behind the shape of these curves is the historical observation that financial activity that occurs outside the regulatory net is more systemically risky than what occurs under the regulator's eye (Chancellor 1999; Gorton 2012; Kindleberger and Aliber 2005). Middle-income economies tend to have accumulated large enough stocks of wealth to create a reasonably sized pool of investors who are both eager for higher returns and sophisticated enough to find their way around the regulations. Shadow banking activity accordingly thrives in middle-income economies with repressive regulatory settings.

China's experience with wealth management products, trust companies, entrusted loans, and the off-balance sheet activities of banks and local governments are all examples of human ingenuity being brought to bear on the simple problem of a lack of returns on savings deposits and a narrow choice of alternative investible assets. Wealth management products were the major alternative investment vehicles proliferating at the time of Xi's ascent. The *Westpac MNI China Consumer Sentiment survey* (McKay 2014c, 2015) asked the following question of 1000 randomly sampled Chinese respondents each month: "What is the wisest place for your savings?" Over the year to October 2015, bank deposits were cited by an average of 36% of respondents, while wealth management products were second at 21%. Domestic real estate was third at 16%. All other major asset types (including bonds, equities, microfinance, and mutual funds) came in well under 10%. It was the ready demand for wealth management products, the key liquid alternative to administratively capped deposit rates (prior to their reform on 23 October 2015) that enabled the growth of China's enormous shadow banking system, with all of the incumbent risks.

China, of course, did not invent the shadow banking problem and nor will it come up with an elegant resolution that will endure for all time. One pertinent historical example comes from South Korea in the 1990s, where the Bank of Korea was forced to abandon monetary aggregate targeting as shadow banking activity increasingly rendered its M2 target irrelevant for the control of credit (Bank of Korea 2008;

McKay 2014b). Japan had its own issues as it faced the decline of the post-Bretton Woods international architecture at the same time that it wrestled with "middle-income problems" at home and debated the usefulness of its Allied-imposed separation between banking and the securities business (McKay 2014a). The decline of the Glass Steagall Act in the USA was one contributor to the massive lift in shadow banking activity in the lead-up to the GFC (Devlin and McKay 2008; McLean and Nocera 2011), while the act itself was instituted to insure against a repeat of the extraordinarily damaging impact of delinquent margin loans on the solvency of banks in the wake of the 1929 stock market crash (Kindleberger 2006; Kindleberger and Aliber 2005).

Recalling the initial discussion and peer review of China's industrialisation path and mode, in this framework it seems entirely reasonable to pursue a gradual approach to financial reform at a GDP per capita level of $US2,000. However, at $US8,000 per head, the level China reached at the onset of the Xi era, the implicit cost-benefit analysis of that strategy, where macroeconomic stability is the ultimate objective, was less clear cut.

Deepening financial deregulation cuts across each of the reform categories put forward above. It would have to tackle specific distortions that created rents and skewed resource allocation (the low cost of capital for certain firms and industries), it would have helped address asymmetric opportunities that led to, and inflamed, imbalances (via improved entry conditions to boost competition, improved access to finance for private firms and households), and worked to lower macroeconomic risks, and enhance macroeconomic benefits, in a more general way (reducing systemic risk through increasing the market-based allocation of capital).

In sum, the theme of overdue financial reform is a critical element in understanding the inheritance of the Xi administration.

8.3.3 The Remuneration of Labour, Particularly Internal Migrants

Turning now to labour, while the basic wages of migrant workers had increased rapidly in the Hu-Wen era, a joint consequence of the demographic tightening of the labour market and a policy focus on raising incomes, they were still an underprivileged group in many ways. The first was that wage rises for this group may have been as little as half the rate of increase of the wages of other workers historically (Huang and Tao 2010, Appendix, p. 27). The second was the problem of lack of access. Non-wage working conditions provided to urban residents, plus access to the social safety net and to public services were legally withheld from migrant workers. Addressing the access problem would require some fundamental shifts:

1. Providing access to public services based on place of residence for workers and their families, rather than in their place of registration.

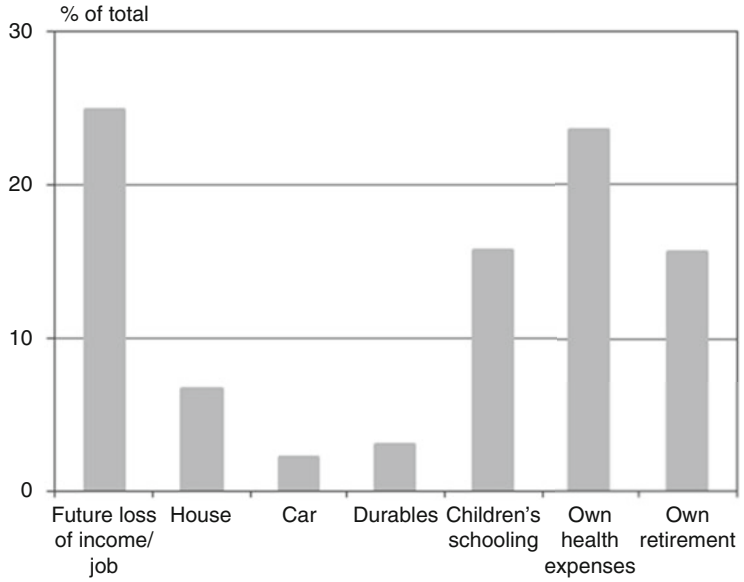

Fig. 8.7 Primary motivations for saving among Chinese households. Source: Westpac MNI China Consumer Sentiment survey. See the discussion and data in McKay (2015, pp. 14–15). Note: The house, car, and durables options cover outright purchases and down payments

2. Providing access to social security in their place of residence, rather than in their place of registration.
3. Providing access to equivalent non-wage working conditions as urban residents.

Bringing about such access would have been a very positive step to optimise the opportunities presented to the Xi administration by both current and future urbanisation. The increase in consumption that such optimisation would imply, with an equivalent decline in savings rates, would surely raise domestic absorption (Song et al. 2010b), cushion the impact of excess capacity in industry, and accommodate a smooth re-orientation towards domestic demand rather than foreign sales.

The *Westpac MNI China Consumer Sentiment survey* (McKay 2014c, 2015) asked the following question of 1000 randomly sampled respondents in Xi's China each month: "What is the main reason that you are saving?" The results over the year to November 2015 are averaged and presented in Fig. 8.7. The dominance of precautionary motivations in the savings calculus of Chinese households was extremely striking (McKay 2015, p. 14). Loss of employment, retirement, education, and health costs all loomed large. The first two relate to the lack of an effective welfare system. The last two relate to the poor state of the public provision of basic services. Education might be further interpreted as an additional act of self-insurance by parents, who invest heavily in their (sole) progeny to maintain them in their old age, as the State currently does not. This evidence implied very strongly that

a non-trivial payoff in terms of consumption growth awaited if policymakers could build a credible social safety net available to all citizens.

Like the financial reform question, the migrant labour question cuts across many fundamental policy areas. Moreover, as for the financial reform question, bringing about the access regime depicted above would feature initiatives that fit into each of three categories above—it would tackle specific distortions (the minimal non-wage costs borne by firms employing migrants); it would address asymmetric opportunities that lead to and inflame imbalances (improve quality and quantity of education and health care); and it would work to minimise macroeconomic risks, and enhance macroeconomic benefits, in a more general way (providing the demand cushion for a re-orientation towards domestic sales, while helping to absorb excess industrial capacity). It is here that the ultimate complementarity of the twin goals of reducing the characteristic over-industrialisation and optimising the benefits of urbanisation becomes extremely clear.

Watson's (2012) call for an integrated, centrally funded and administered, portable pension system available to all Chinese citizens was an appropriate template for social security reform at the time of Xi's ascent. The degree of pension coverage at the provincial level was widely variable at the time and even in the best-performing provinces it was far from universal.

It was an obvious inefficiency in China's early 1990s fiscal system reforms that the national government effectively centralised taxation revenues, but that expenditure responsibilities—such as pensions—were not transferred in lockstep (see Sect. 8.3.4).

8.3.4 Fiscal Policy

The transition to a new model that de-emphasises manufacturing, investment, and export sales and re-emphasises domestic household consumption cannot be brought about without fiscal reform. Indeed, fiscal policy is the key weapon at any government's disposal for altering the relative prices of productive factors and the ultimate distribution of national income among key institutional sectors. One example is the preferential treatment of SOEs in terms of their dividend payments. The government could demand a higher rate of dividend payments from SOEs (see the discussion in Sect. 8.4) and redeploy the funds to accommodate the migrant welfare reforms considered above. The State Council guidelines for income redistribution set out such a policy in the early days of Xi, and the SOE reforms of 2015 codified a timetable for raising dividend payouts. In a period when factor distortions that disproportionately benefit large, centrally controlled SOEs remain in place, it makes sense to redistribute their excess profits in a structurally beneficial way, rather than allowing further inefficient capital accumulation. Competition policy can also be brought to bear in this regard. Policies that boost competition in services sectors through foreign investment and those that constrain oligopoly pricing could have considerable benefits in rebalancing the growth model (Tyers 2012).

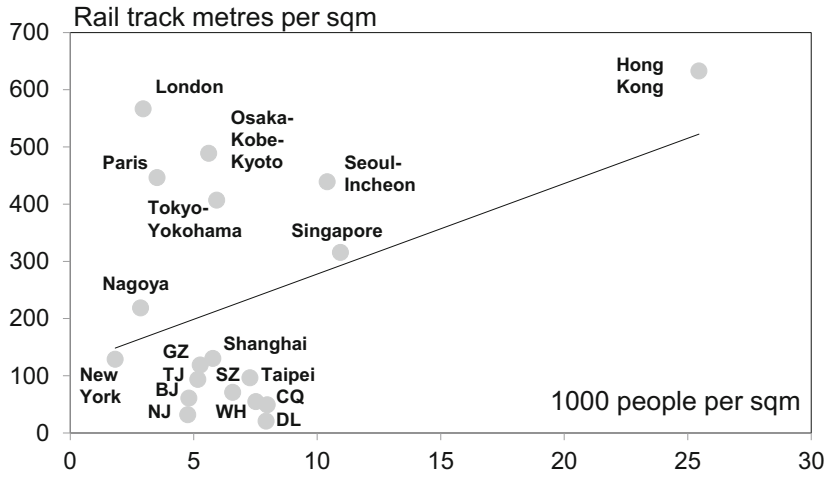

Fig. 8.8 Urban rail system density and population density. Source: OECD (2013, p. 74). Abbreviations are as follows: *WH* Wuhan, *GZ* Guangzhou, *TJ* Tianjin, *CQ* Chongqing, *SZ* Shenzhen, *NJ* Nanjing, *DL* Dalian

Another relevant aspect of China's historical path is the infrastructure–urbanisation nexus. In the peer review, it was noted that the infrastructure proxy—the length of rail line open scaled by land area—implied that China may be over-industrialised, it was not without its infrastructure deficits at the opening of the Xi era. Looking more broadly at the infrastructure space, logistics costs were equivalent to 18.1% of GDP in 2012, compared to around 10% in the USA.[6] Regarding mass urban transit systems (see Figs. 8.8 and 8.9), the OECD (2013, p. 74) argued that "A considerable deficit in provision needs to be overcome. In the ten largest cities, the average rail density per square kilometre is only one-quarter that in the major urban areas outside of mainland China and the density per one million people is only one-fifth".

In terms of end-to-end international trade logistics, in 2012, China ranked 26th worldwide in the World Bank's Logistics Performance Index (World Bank 2012),[7] ranking around 20% less efficient than the best-performing economies in the sample. Only 74% of urban Chinese presently had access to sanitation at this time, according to World Bank data. China's gas pipeline network was quite small considering its landmass (author calculations from data in the CIA 2012), while energy and raw materials costs varied widely by region, reflecting weak internal market integration that produced only modest spill-over effects between provinces (Golley and Groeneweld 2007). China serviced the world's fourth largest land area with only

[6]The Chinese figure is calculated using data sourced from the CEIC database. The figure for the USA is a personal communication from Access Asia, a Shanghai-based consultant to multinational retailers.

[7]This observation will be returned to below in the discussion of China's international competitiveness as its labour costs rise.

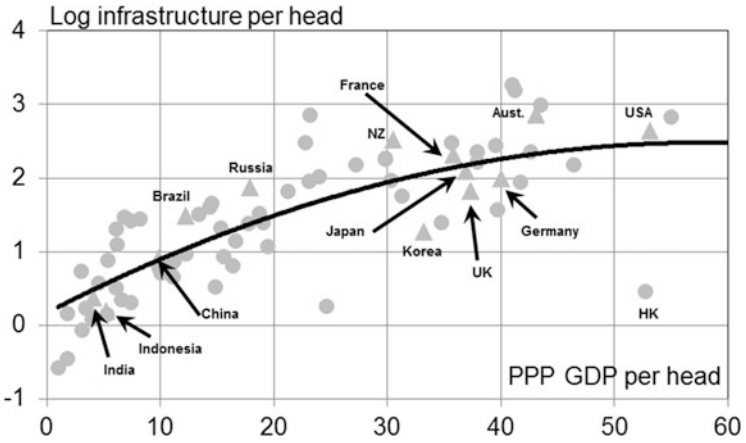

Fig. 8.9 Infrastructure stock per capita and income per capita. Sources: Infrastructure estimates come from IMF 2014, Fig. 3.4, p. 80), which were then paired with GDP per capita estimates from the World Economic Outlook database attached to the same resource. Notable individual economies are highlighted as triangles and labelled for illustrative purposes

the fourteenth-most airports, with 507. The USA, with a similarly vast land area, had 13,513 airports (CIA 2012). The result of these many significant gaps is that China's total infrastructure stock per capita was modest by the standards of the strategic core (Fig. 8.9).

A balanced review of this evidence leads to the conclusion that it is not difficult to envisage the share of capital accumulation going into infrastructure rising, as China seeks to optimise its urbanisation opportunity, but the share going towards manufacturing capacity—particularly of the energy-intensive and/or export-oriented varieties—declining. Allocating investment to regions where the capital stock deficit was most pronounced and reducing the emphasis on areas where capacity was already ample or excessive was thus an obvious expedient for the Xi administration, with equally obvious expected outcomes on efficiency of investment across the economy, albeit within the context of a likely long-run decline in the investment share.

All of the above said, if China was to provide the social safety net required to unlock latent consumption potential and thereby optimise urbanisation, the mix between consumption and investment in overall government activity would have to change. Ma and Wang (2010) note that gross public savings have been unusually high in China, in addition to the high household and corporate savings rates seen since the turn of the millennium. High public savings have manifested in a high rate of public fixed investment and a low rate of public consumption.

The issue of vertical fiscal imbalance was also waiting to be addressed (Wong 2013), including cutting the reliance of local governments on creative financing and pro-cyclical land sales revenues (Tao 2014). This task was complicated by the legacy of large actual and contingent debts accrued during and after the stimulus era.

8.3.5 *International Competitiveness and Factor Market Distortions*

The most desirable kink in China's strategic pathway at the end of Hu-Wen era would have been a move towards greater reliance on domestic demand in tandem with a continuation of global export market share gains: a first quadrant strategy that was closer to the boundary of the fourth quadrant than to the 45-degree line.

From the point of view of Xi, that would have come back to China's ability to continue along the dynamic substitution path in its trade relations despite the secular increase in labour costs associated with the development process (i.e. changes in its comparative advantage) and any additional headwinds exporters and import competing firms encountered due to the loss of competitiveness occasioned by the reduction of historical factor market distortions (i.e. changes in the constellation of non-fundamental parameters that have supported the historical market share).

Dealing first with the fundamental aspects of China's level of international competitiveness, the middle-income economy Xi inherited had become a more expensive place to employ ordinary, managerial, or engineering labour in manufacturing than its low-income neighbours (Fig. 8.10). It was still, however, considerably cheaper than the NIEs (South Korea, Taiwan, Singapore, and Hong Kong). Furthermore, China's trade logistics were superior to those countries that had a basic labour cost advantage over it (Figs. 8.10 and 8.11), which indicated that on an all-in basis, including time-to-market, it was still very competitive in sectors where

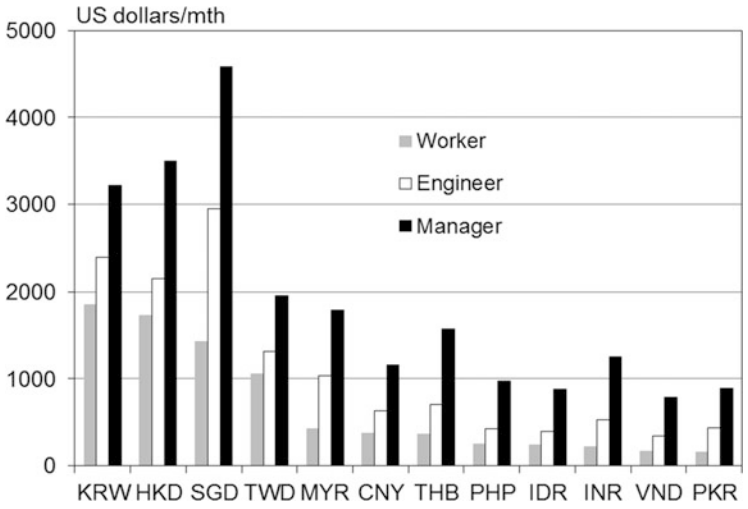

Fig. 8.10 Comparative wage levels in manufacturing across Asia: 2013. Source: JETRO (2014, pp. 30–32). Notes: Abbreviations are currency codes for the following countries: *KRW* South Korea, *HKD* Hong Kong, *SGD* Singapore, *TWD* Taiwan, *MYR* Malaysia, *CNY* China, *THB* Thailand, *PHP* Philippines, *IDR* Indonesia, *INR* India, *VND* Vietnam, *PKR* Pakistan. The wage information is reported in a survey of Japanese manufacturing firms operating in each jurisdiction

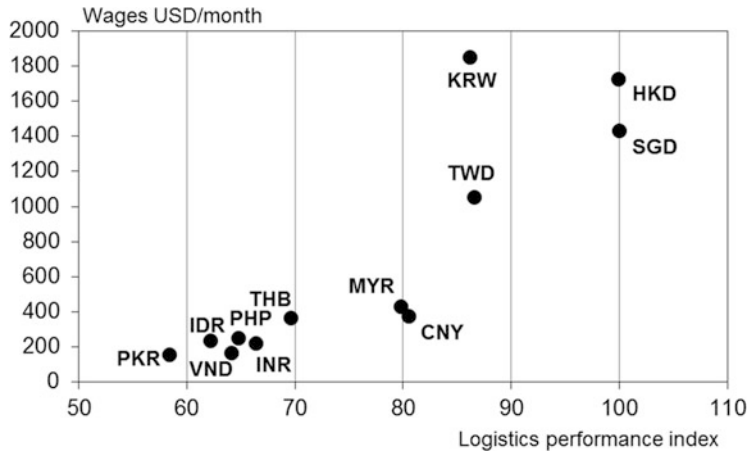

Fig. 8.11 Wage levels in manufacturing and relative logistics performance. Source: JETRO (2014, pp. 30–32) for wage levels. World Bank (2012) for the Logistics Performance Index, which is expressed as a percentage of the top performing nations globally, which are Singapore and Hong Kong. Notes: Abbreviations as in Fig. 8.10

logistics contributes a material proportion of the overall cost. Certainly, China was still a major beneficiary of FDI flows at this time, despite clearly beginning to lose very labour-intensive market share to lower-income nations such as Vietnam.

China was home to almost 4% of the world stock of inward FDI as of 2013, a figure that had almost doubled since 2007. China's share of the flow of FDI was almost 9% in 2013, up from around 4% in 2007 (Author calculations from the UNCTAD database). Clearly, business decision makers around the world saw China as an attractive place to base new operations. These investments brought the technology that the Chinese economy required to continue to move up the value chain and drive dynamic substitution. The concern, of course, was that a reliance on imported technology via FDI, in the absence of the development of indigenous innovation skills, left the economy vulnerable to any diminution of such flows.

In Japan, and also later in South Korea, the role of engagement with foreign firms in the outward-oriented industrialisation sub-strategy was to gain access to technology as a vehicle for building the sophistication of local industry, driving the dynamic substitution process thereby.

There was an unwillingness to welcome large numbers of foreign firms into the local market to use it as an export base. Local firms absorbed technology and became adept at producing incremental innovations that built upon whatever they had licensed from abroad. From there, they slowly developed the ability to innovate in their own right. Those firms that were most successful in this regard developed into multinational corporations. These multinationals, sitting at the heart of large networks of skilled specialist suppliers with whom they built mutually beneficial long-run relationships, were the key strategic organisations that drove the dynamic

substitution process all the way to high-income status and membership of the strategic core of the world-system.

The large role played by onshore manufacturing FDI in China's outward-oriented industrialisation sub-strategy was thus a major point of difference. A negative reading of the historical role of FDI in China could argue that indigenous innovation has been somewhat stunted by the dominant role of foreign-funded firms in both China's international engagement and its move up the value chain. This may also have been the case in Malaysia, where FDI for export purposes flourished in the drive to middle-income status, but growth has clearly decelerated since the turn of the millennium (Woo 2009). A catalogue of counter-arguments would be that the widespread use of joint venture structures for FDI has allowed local firms to absorb a great deal of technology and tacit knowledge; the observed decline in the foreign-owned firm share of total trade flows (see Fig. 7.7 in the previous chapter) would seem to argue that local firms had been boosting competitiveness in their own right; plus the fact that China was already a critical player in the global supply chain for high tech goods well before Xi came to power (Athukorala 2005; Rodrik 2006) and that local firms were increasingly exporting a range of goods that demand a high level of engineering skill. Very simply, the evidence presented in Chap. 7 regarding the process of dynamic substitution points to a strong fundamental underpinning to China's rising share of global traded activity at the time of Xi's ascent.

Moving beyond fundamentals now to discuss the distortions that may have artificially raised China's export share historically, Anderson (2006, p. 8) observed that Chinese industrial profits rose strongly as a proportion of GDP in the middle 2000s despite profit margins remaining quite steady. Those apparently contradictory developments only make sense if there has been an associated "expropriation of export market share" allowing for a rising volume of sales (Anderson 2006; McKay and Song 2010, pp. 16–17). The huge influx of FDI for export purposes in the wake of WTO accession reflected not only pent-up demand held back by unease with the institutional background for FDI. It also clearly reflected a view that the cost base in China was extremely competitive vis-à-vis other potential locations in East Asia and elsewhere, some element of which in turn reflected a view on factor price distortions, plus the level of the exchange rate. Furthermore, the creation of capacity well in advance of domestic needs alone pushed Chinese producers into foreign markets, where they were frequently accused of dumping their goods. Between 1995 and 2014, 22% of all anti-dumping suits were initiated against Chinese exporters (WTO 2015, Fig. 8.12), with the proportion noticeably higher post-accession in 2001. This outsized share of anti-dumping suits going to a single country may indicate that a common factor was at play across all export industries that produced a major cost advantage deemed "unfair" by external competitors. The perception that China was "cheating" was a key reputational inheritance for Xi.

In Chap. 3, there was an extended discussion of the circumstances under which an outward-oriented sub-strategy could founder when a certain constellation of policies, consistent with a certain level of global export market share, was altered internally or successfully challenged by external forces. The large appreciation of China's real exchange rate since the ending of the US dollar peg in 2005, plus the actual and

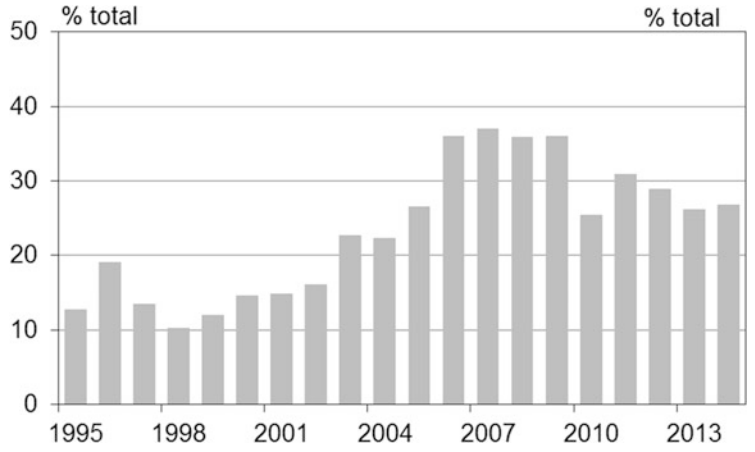

Fig. 8.12 Anti-dumping suits initiated against China: share of total. Source: Author calculations from data in WTO (2015)

prospective reform of factor market distortions that have lowered the cost base of Chinese manufacturing exporters, are both potential challenges to the extant sub-strategy and the market share it has produced.

The evidence argues that the dynamic importance of the exchange rate, which as of 2015 was some 54% stronger in real effective terms and 27% stronger against the US dollar since the de-pegging of June 2005,[8] may be overstated. First of all, the considerable real appreciation occurred in lockstep with China's ability to increase its world export share (Fig. 8.13). That is consistent with the observation that China's post-1978 strategic pathway has been, in the main, a balanced one passing through the desirable first quadrant. In this framework, while an economy enjoys a faster rate of productivity growth than the frontier, its footprint in world trade increases along with the rise in its relative living standards. These dynamics are far removed from the pathway of export-dependent strategies, which leave their exponents extremely vulnerable to external shocks, and any material adjustment in the mercantilist policy framework renders the *ex ante* market share unsustainable.

Secondly, empirical estimates argue that the income effect has been dominant over any price effect on Chinese export growth over the long run, in line with the results seen in major advanced economies. Aiello et al. (2015, p. 71) argued that "Exports are significantly determined by foreign demand, with long-run income elasticity significantly higher than unity for China, Japan, Germany the UK and the US. Conversely, exports are price inelastic for 'most countries' in the sample, in both the long run and the short run" (Note that China is part of the "most countries" grouping). If China's exports were price elastic, then the exchange rate adjustment

[8] Author calculations based on the "Bank of International Settlements" real effective exchange rate measure and information in the CEIC database. The changes are calculated from June 2005 to September 2015.

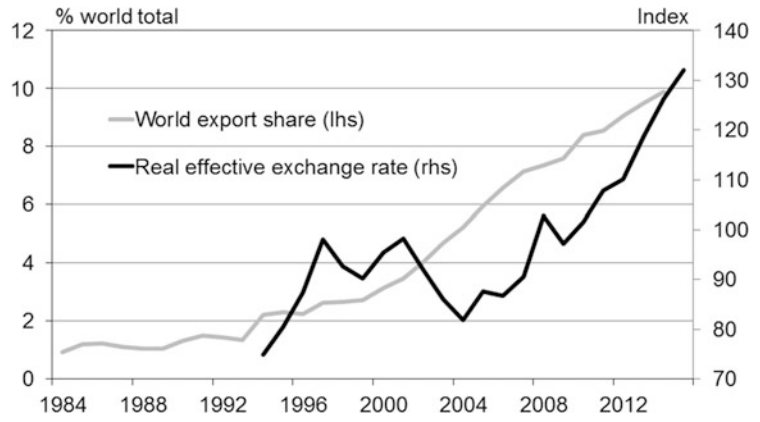

Fig. 8.13 China's world export share and its real exchange rate. Sources: Author calculations based on the Bank of International Settlements' real effective exchange rate (abbreviated as REER) measure accessed from the CEIC database. The world export share is calculated from the World Development Indicators

over the last decade or so would have been very damaging to its market share. As China's footprint in global trade has continued to rise consistently over this period, it is hard to argue that the performance of the currency has been a major factor artificially underpinning its current market share. Indeed, it might be reasonably argued that both China's rising share of trade and the appreciation of its real exchange rate are endogenous outcomes of a highly successful outward-oriented industrialisation sub-strategy, not driving forces in their own right.

It is also worthy of note that the considerable narrowing of China's current account surplus from the 2007 peak has been principally due to a rise in its import bill, not a loss of export share, even though the growth of exports since the GFC has been modest relative to the period between that shock and WTO accession. Coming out of the GFC, China's import bill reclaimed its pre-crisis level in US dollar terms in December of 2009, while export earnings only reclaimed their pre-crisis level in US dollar terms in May of 2010. The rising import bill was amplified by the performance of commodity prices, which reflected China turning the terms of trade against itself through a major uplift in fixed investment at a time when external demand was extremely weak due to the balance sheet problems faced by the strategic core.

All of the above said, the circumstantial evidence of the thousands of anti-dumping suits; the rise in industrial profits share despite the stability of margins; and the excess capacity problem all point to some portion of China's historical export share being attributable to distorted factor markets, and this was a central element of the Xi inheritance.

In conclusion, this section surveyed multiple aspects of China's international competitiveness at the time of Xi's ascent. Higher wages were offset to some degree by advantages in logistics infrastructure over cheaper labour jurisdictions. The historical reliance on FDI rather than indigenous innovation, which differs from

the Japanese template, was a point of caution. Evidence that the dynamic substitution process was far from mature was tabled. On the non-fundamental front, the direct evidence that the level of the exchange rate has artificially raised its export share to a level that cannot be sustained is weak. In fact, the exchange rate and export share can easily be characterised as endogenous outcomes of the success of the outward-oriented strategy, not underlying drivers of the process. However, the circumstantial evidence that the distorted factor pricing regime has led to the "expropriation" of excess market share is strong.

8.4 A Political-Economic Comment

Xi did not just inherit a set of macroeconomic challenges across the gamut. He inherited a political-economic system replete with vested interests. Entrenched rent-seeking interest groups—or distributional coalitions as Olson (1982) termed them—do not have a history of stepping gracefully aside when their privileges are attacked. That is one of the reasons why societies featuring an unequal distribution of income may have struggled to navigate the middle-income trap (Acemoglu and Robinson 2012; Fung and Yao 2014; Woo 2009, 2012). China's closest peers in the Gini scatter plot in Fig. 8.4 include some notable middle-income failures from resource-rich Latin America and the former transition economies of Eastern Europe. Despite China's successes to date with its outward-oriented industrialisation drive, it would be naïve to ignore the possibility that pronounced levels of income inequality, with the range of socio-economic corollaries that can accompany such a phenomenon, becomes a constraint on consistent future progress towards high-income status. The Xi administration inherited an expenditure and income distribution flow structure, and an accumulated asset and liability stock, and it also inherited a complex of interests that benefited from the historical model and were likely to seek to defend their accumulated gains and to retain their privileges. In short, Xi inherited a ready-built and well-resourced prospective anti-reform cohort.

Xi (and Li) recognised this challenge and highlighted it in their communications. Recall again the State Council's words: "deepening the income distribution reform is a systematic project that is arduous and complicated and *concerns the reallocation of various interests*" (quoted in "China to reform income distribution" 2013, author's italics).

A number of initiatives were instituted in the early days of the new administration towards this end. A number of signalling moves—"austerity begins at home" style policies for the public sector—were announced ("Factbox: highlights of China's income distribution reform plan" 2013). More direct policies on the dividend payout ratios of SOEs and the use of the proceeds from the sale of state assets were also announced. Indeed, the speed at which these guidelines were rolled out implied that it may well have been accorded superordinate status by Xi. While a more vigorous redistribution of rents was obviously a useful transitional position, which could improve China's post-tax and transfers level of income inequality, a long-term

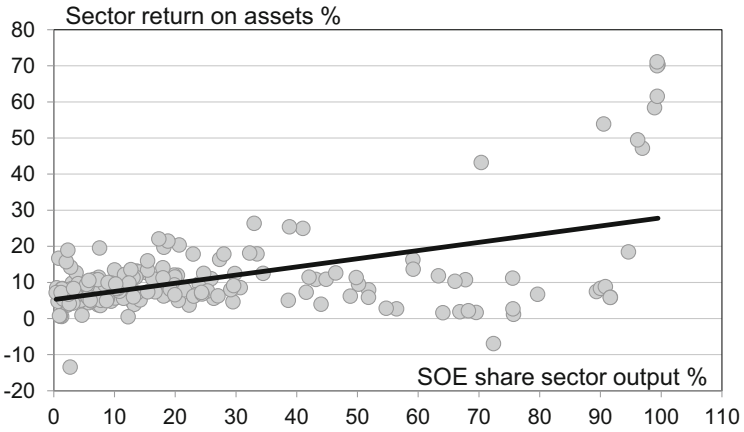

Fig. 8.14 Return on assets and state ownership share by industry sector. Source: Song et al. (2011, Fig. 1, p. 43). Based on firm-level observations from 2005 to 2009. The data for compiling this figure was provided by Ligang Song

solution operating parallel to the aggregate shift in sub-strategy towards a household-led demand model, would look to minimise the rents themselves.

That brings the discussion to another element of the inheritance: undue market power of major SOEs. This distortion redistributes income towards domestic firms in oligopoly or monopoly sectors, and away from households, the government narrowly defined, firms paying inflated prices for inputs; and foreign firms that lose market share to such firms in their home jurisdictions, inside China and in third markets. This was a key area where the expectations of reformers were especially acute. Figure 8.14 summarises the corporate universe in China, scaling the return on assets by sector by the SOE share of ownership. The commanding heights are in the top right corner—near monopoly ownership by the state, and very high returns. The bottom left corner is where the major number of firms are positioned: low return and high rates of private ownership.

Beyond the SOE question, the ultimate political-economic test will come if at some future point the superordinate goal of CCP supremacy—the 70% where Mao was "right"—comes directly into conflict with the logic of the DST. That will be a central question in the 2100 pathways of Chap. 10.

8.5 Conclusions

The aim of this chapter was to describe in detail the inheritance of the Xi era. This provides critical context for assessing the major initiatives and themes that have characterised his strategic inclinations to date. China's economic structure at the outset of the Xi era was both over-industrialised and under-urbanised relative to its

level of income per head, while maintaining a high degree of export orientation for such a large economy. China's income distribution was highly unequal as a result of the nature of its drive from low to middle-income levels. This discussion was framed by the experience of a peer group of economies that have also succeeded in quadrupling their living standards from $US2,000 GDP per head to $US8,000 GDP per head in the post-Second World War period.

Some aspects of China's historical path and the resultant contemporary structure were positioned as an impediment to sustaining growth in aggregate living standards in an environmentally conscious way while simultaneously promoting equality of income and opportunity. Others were seen as advantageous for the pursuit of these basic national goals.

The argument then proceeded to outline the policy parameters that helped shape this legacy. The argument was initially conducted within the context of specific distortions, but was then broadened to macroeconomic policy writ large and political-economic considerations.

The normative element of the discussion concluded that the intuitive goals of reducing over-industrialisation, optimising urbanisation, emphasising domestic absorption by households over foreign sales while remaining on the dynamic substitution path, all accompanied by a more distribution if income—can ultimately be complementary. That offered a path for Xi—albeit a somewhat narrow one—to design a policy platform that allowed China to smoothly transition to a new model while continuing to progress through the first quadrant of the *Strategy Grid*.

At this point a caveat—a realist one—was introduced: that the many facets of path dependence collectively presented a material prima facie political-economic constraint to the delivery of a smooth transition pathway. The following chapter will indicate how Xi has chosen to frame and manage the major traditional and political-economic challenges he inherited, as well as the new themes and problems that have emerged along the way.

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Chapter 9
China's Strategic Pursuit under Xi Jinping and the New Era

9.1 Introduction

The ascent of Xi Jinping to the triumvirate of leadership positions—Secretary-General of the CCP and Chairman of the Central Military Commission in 2012, and head of state as President of the People's Republic of China in 2013—was a critical inflection point in China's long-run strategic pursuit. His appointment to second and third terms in these positions five and ten years later, the enshrinement of his eponymous philosophy in the CCP Constitution in 2017, the contemporaneous statement that Xi was the CCP's "core", the CCP Central Committee declaring Xi Jinping Thought to be "the essence of Chinese culture" in late 2021, alongside his drafting of only the third resolution on history in the CCP's 100 years of existence,[1] have a cumulative evidentiary force.

The composition of the 20th Politburo Standing Committee announced in October 2022, which saw Xi allies and proteges assume key positions, with factional opponents humbled, put the capstone on a decade of moving towards personal paramountcy. Xi Jinping's views, whether directly expressed such as in his official Work Reports to CCP Congresses (Xi 2017, 2022), or through formal signalling

[1] Official news agency Xinhua (2021c) published a celebratory piece on 17 November 2021 marking the occasion. It is worthwhile quoting the opening text of that article here: "The sixth plenary session of the 19th Central Committee of the Communist Party of China (CPC), held in Beijing from Nov. 8–11, has adopted a landmark resolution on major achievements and historical experience of the Party over the past century. It is the century-old Party's third resolution on historical issues. Seventy-six years have passed since its first resolution on historical issues and 40 years since the second. Noting that learning from history is a vital characteristic in Chinese culture, Xi Jinping, general secretary of the CPC Central Committee, has stressed that the Party has consistently attached great importance to reviewing its historical experience. From that consideration, the Political Bureau of the CPC Central Committee in March decided that the sixth plenary session would focus on a comprehensive review of the Party's major achievements and experience in its century-long history. A working group was established, with Xi as its chief, to draft the document".

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mechanisms such as the 14th 5YP, must be accorded superordinate status when considering the nature of the next kink in China's strategic pursuit.

This chapter bridges those on either side of it by documenting the choices Xi's administrations have made in response to the inheritance outlined in Chap. 8, while drawing out forward-looking strategic inferences to assist with the very long-term scenario analysis of Chap. 10.

9.2 The Achievements and Disappointments of Xi's First Two Terms

As the foregoing chapters illustrate, no 10-year period in the history of the People's Republic has lacked either domestic or international turbulence. It has been no different in the Xi era. Strategic framing under Xi has been partly constrained by the legacies of the recent past, and partly by the way the external environment has evolved, noting of course China's endogenous role in shaping international developments and foreign attitudes towards themselves (Shirk 2023). Even so, domestic complexity has not served to constrain the emergence of soaring ambitions for China's position in the world-system. Building on the rhetorical base of the moment of "strategic opportunity" that emerged around the opening of the twenty-first century (Song 2022), Xi added visions of the "Chinese Dream" of national rejuvenation in his first term, while proclaiming a "New Era" at the opening of his second. The New Era is positioned as the third in CCP history: the first was Mao's approximate half-century of paramountcy,[2] and the second began after the Third Plenum in 1978.

This ideological evolution has moved China from a status quo actor in the world-system to a more dynamic, ambitious, and assertive player: a player with a keen sense of history and a fervent desire to never again allow itself to be humiliated by foreign powers as it was over the century leading up to the founding of the People's Republic. That entails engaging in global governance to alter—or revise—the norms that have been shaped in the interests of the Global North that has dominated the world-system and monopolised the membership of its core under the Industrial paradigm.

"Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era" envisages a rejuvenated and self-confident nation no longer content to reside outside the core of the world-system and be a rule-taker. The corollary is that China is also no longer content to follow Deng's [paraphrased] mantra with respect to external engagement of "hiding our strength and biding our time".

In Xi's address to the 20th CCP Congress, he delivered the following analysis:

[2] An interesting aside: the 20th CCP Congress of 2022 gave Xi his third consecutive term as Secretary-General. It was also the first time that the Chinese economy had grown at a slower rate than the world economy since 1976—the year of Mao's death.

> "Today, our world, our times, and history are changing in ways like never before. The historical trends of peace, development, cooperation, and mutual benefit are unstoppable. The will of the people and the general trends of our day will eventually lead to a bright future for humanity. And yet, the hegemonic, high-handed, and bullying acts of using strength to intimidate the weak, taking from others by force and subterfuge, and playing zero-sum games are exerting grave harm. The deficit in peace, development, security, and governance is growing. All of this is posing unprecedented challenges for human society. The world has once again reached a crossroads in history, and its future course will be decided by all the world's peoples" (Xi 2022). As the paramount leader of roughly one-fifth of the world's people, Xi no doubt envisages that he has a considerable role to play in determining how these crossroads are navigated. Consonant with that, Xi has proposed a troika of sweeping but vague global "initiatives" in Security (Xinhua News 2022), Civilisation (Xinhua News 2023), and Development (United Nations 2021).

Looking inwards again now, the economic reform drift that characterised the Hu-Wen years has been replaced with an action-oriented, interventionist approach to addressing imbalances with a clear move towards centralisation of power and concentration of political decision-making within Xi's trusted circle. Far-reaching policy-political initiatives have been launched, with an eye to positioning Xi as the CCP's "core", pursuing China's long-run entry into the core of the world-system, while simultaneously securing the primacy of the state, and the CCP, both at the commanding heights and in the rituals and motions of everyday life. At the same time, the international climate has become increasingly complex, and considerably less accommodative than at any other point in the lifetime of a Chinese citizen born after 1989. That year of course featured two major milestone events that helped shape both China and the world order that China is attempting to revise: the Berlin Wall and Tiananmen.

The major initiatives and policy foci of the Xi era to date have been, in rough chronological order: the anti-corruption drive that was equal parts populist, necessary and politically ruthless; the Belt and Road Initiative (BRI) that saw immense sums directed by Chinese entities towards foreign investment projects across Eurasia and beyond; the "Three Tough Battles" of financial risks, pollution and poverty alleviation, linked to the achievement of the first Centenary Goal[3]; the "Supply Side Structural Reform" (SSSR) that sought to remediate some of the investment and financial excesses of the Hu-Wen era; the "Made in China 2025" high-tech industrial policy blueprint; the decision to discontinue the one-child policy; a major reorganisation of central government ministries, commissions and agencies; the descent into overt rivalry with the USA and its allies; the launch and diffusion of Xi's "New Development Philosophy", encompassing the "Dual Circulation" model of economic development that prioritises self-sufficiency and supply chain resiliency via the construction of an internal mega-market alongside selective international engagement; and the "Common Prosperity" banner of socio-economic

[3] The two centenary goals are for 2021 (marking the founding of the CCP) and 2049 (marking the founding of the People's Republic of China). For 2021, the goal was to "build a moderately prosperous society in all respects". By 2049, the goal is to "build a modern socialist country that is prosperous, strong, democratic, culturally advanced and harmonious". (Xinhua 2017).

redistribution, which seeks to resolve the " . . . relationship between efficiency and fairness [that] has been a constant topic in modern human history" (Xinhua 2021b). It is also a clear rhetorical break from Deng's pragmatic maxim that "some people will have to get rich first". In the early 2020s, efforts to contain and then recover from and manage the COVID-19 pandemic and the acceleration of efforts to tackle climate change have been to the fore, the latter being captured in China's "30/60" carbon peak and carbon neutrality targets.[4]

The major delayed or avoided domestic reforms of the Xi era to date have been the lack of a concerted effort to address inherent contradictions in the fiscal policy framework (Wong 2013), and to reenergise the reform agenda for SOEs. International financial reforms have been stop-start and risk averse, which has hampered the progress of RMB internationalisation (McKay 2007, 2014).

The connections between these macro initiatives and the inherited issues and imbalances identified in the previous chapter are clear. So too are efforts to leverage China's comparative advantages to greater effect and move further up the value chain—on the back of indigenous innovation (Lin 2022). At the next level of specificity, a great deal has been achieved that is positive and consistent with a conventional strategy mix under the Industrial paradigm. Financial repression has been reduced by increasing the market's ability to influence both interest rates and the exchange rate. Corporate debt has been put on a more sustainable trajectory and local government debt is less opaque now that sub-national authorities are raising finance through the bond market. The marketisation of factors of production such as energy has increased, and a broader and more effective social safety net has been built (Global Times 2021).[5] China's ranking in the comprehensively measured Global Innovation Index has increased strikingly from 34th in the world in 2012 to 11th in 2022 (World Intellectual Property Organisation 2012, 2022), and it has improved from 24th in the world in 2010 to 17th in 2020 in Harvard University's "Economic Complexity" rankings (Harvard Growth Lab 2022).

China has also made some headway on the corruption that became so pronounced in the latter years of Hu-Wen that the outgoing Secretary-General addressed it openly at the 18th CPC Congress (Hu 2012; Grant et al. 2012; Shirk 2023: 110–113). Based on Transparency International's (2012, 2021) indexes, China improved its global ranking from 80th least corrupt in 2012 to 66th in 2021, with its absolute corruption score having gone from worse than the world average in 2012 to slightly better than the world average in 2021 (ibid). The quality of China's logistics infrastructure, as defined by the World Bank (2010, 2018) improved from

[4]The 30/60 plan aims to secure a peak in carbon emissions before 2030 and to reach carbon neutrality by 2060. Xi announced these targets in a video speech to the UN General Assembly in September 2020, surprising most observers (Tooze 2020).

[5]China's official press has stated that over the course of the 13th 5YP (2016–2020), basic medical insurance coverage reached 95 percent of the population, and by June 2021, around 1 billion people were covered by basic pension insurance. At the same time period, 222 million were covered by unemployment insurance and 235 million were covered by maternity insurance (Global Times 2021).

27th in the world in 2010 to 20th in 2018. China has also joined the top ranks of countries in terms of both the quantity and the quality of scientific publications[6] (Brainard and Normile 2022); it has emerged as an artificial intelligence "superpower" (Lee 2018); China has slightly more "unicorn" start-ups valued at more than $US1 billion than the USA (Song and Zhou 2022: 7); it has more industrial robots than any other nation (ibid: 6); and in 2022 China was home to around one-third of the world's 500 most powerful supercomputers, up from around a 5% share in 2010 (Top 500: 2022, 2010).[7] China now spends more on experimental R&D than any other country, although it still trails the USA in basic and applied research outlays (Song and Zhou 2022: 7).

On the human capital front, China now produces almost as many science and engineering PhD graduates as the USA (National Science Foundation 2022: 7–8), while Chinese 15-year-olds[8] have achieved the highest scores in the world in the OECD's standardised reading, maths, and science "PISA" tests (World Intellectual Property Organisation 2022: 116; OECD 2018). Environmental and safety considerations have increasingly come to the fore across heavy industry, food, water, air quality (Greenstone and Fan 2020), and energy regulations. In 2022, China accounted for almost half of the world's spending on the energy transition and around 90% of the growth from the prior year (Bloomberg New Energy Finance 2023), while holding dominant market shares in decarbonisation technology manufacturing capacity and critical mineral processing supply chains (International Energy Agency 2021).

On the negative side of the ledger, domestic political competition has been systematically reduced by Xi's inexorable concentration of power and foreign policy missteps have been made (Shirk 2023). Large SOEs have had their positions strengthened at the expense of both smaller public and private enterprises (Lardy 2019), and a heavy crackdown on private, entrepreneurial big technology firms has reduced investor trust in China's equity markets. The root causes of the vertical fiscal

[6]There are number of different measurements of scientific research prowess. They range from the volume of publications, to the number of citations, to scaled measures of the above (such as the proportion of papers that are in the top 1 percent of citations), and scaled authorship of joint papers, and even discounting of total volumes to take account of potential academic fraud (Normile 2017). Whether China or the USA is #1 on this series of measures is arguable, but the fact that China is even in the discussion is quite remarkable.

[7]In June 2010, the USA dominated the world's supercomputing ranks, with 282 of the top 500 machines, or a 56.4 percent share. At this stage, China had just 24 of the top 500, or 4.8 percent. In November 2022, China has 162 of the top 500, or 32.4 percent, while the USA has 127, or 25.4 percent. See the sortable statistics at Top 500 (2022).

[8]Four of China's wealthier coastal provinces participated in the 2018 PISA wave—Beijing, Shanghai, Jiangsu, and Zhejiang—so this is not necessarily an accurate picture of the average Chinese student. Even so, the combined population of these provinces is 196 million, so this represents a very large talent pool. China comfortably exceeded the OECD average score for level 2 proficiency across reading (95 percent vs 77 percent), mathematics (98 percent vs 76 percent) and science (98 percent vs 78 percent). Chinese students were also well above average where higher levels of proficiency were tested.

imbalance (and its outward expressions, such as the local government debt issue and the ongoing reliance on land sales to fund the regular budget at the margin[9]) have essentially been left unaddressed. The local government debt question has been a major preoccupation in 2023, with a sizeable 32% of GDP in on-balance sheet obligations and a further 53% of GDP in potentially contingent liabilities held by legally shadowy financial vehicles (International Monetary Fund 2023: Table 2, p. 44).

Contrary to its strong performance in many other standardised global measures of economic vitality, China made virtually no progress between 2010 and 2019 in the World Economic Forum's Global Competitiveness Index, being ranked 27th and 28th in those respective years (World Economic Forum 2019), or in the World Bank's Logistics Performance Index between 2010 and 2018 (World Bank 2010, 2018) where its rank was also basically unchanged at 26–27th (despite an improvement in the infrastructure subset, as detailed above). And finally, China's "first-in, first-out" status across 2020 and 2021 with respect to the global pandemic, during the course of which China's share of world merchandise exports gained 2 percentage points to 15% in 2021, gave way in 2022 to a needlessly rigid and socio-economically damaging adherence to the "zero-Covid" policy. Combined with a sluggish response to a housing crisis that was in many ways of the administration's own making, China's hard-won reputation as an adept and pragmatic counter-cyclical manager of its economy took a considerable hit. To use a cliché, 2022 felt a lot like snatching defeat from the jaws of victory. The fact that Xi offered dramatic U-turns on these vital issues almost immediately after the CCP Congress was concluded was certainly a relief, but the fact these issues had been left to fester for so long without decisive action was troubling.

China's stock of international goodwill, which had been built up by acts such as maintaining the US dollar peg to the RMB during the Asian financial crisis of 1997/98, and leading the global stimulus response to the north Atlantic crisis of 2008/09, has been reduced significantly in Xi's second term by tactics of bald economic coercion (Glaser 2021), blustering "wolf-warrior" diplomacy, a muscular approach to territorial disputes in the South China Sea (Zhang 2020; Shirk 2023), the apparent ill-treatment of the Uyghur minority in Xinjiang (United Nations Human Rights Commissioner 2022), maintaining a neutral-to-pro-Russian stance on the war in Ukraine, charges of pursuing a policy of "debt-trap diplomacy" in Africa and South

[9]Land sales typically raised about 2½–3% of GDP in revenue annually before the real estate downturn of 2022–2023, when they fell to 1½% of GDP. See International Monetary Fund (2023, Table 1, p.43).

Asia (Blinken 2022, Embassy of the People's Republic of China in the USA 2022),[10] and revelations of wide-ranging espionage activities[11] by the Chinese intelligence agencies abroad (Faligot 2019), including political influence activities that run against China's stated foreign policy doctrine of "non-interference" (Newlin et al. 2020). While an air of *rapprochement* emerged in Chinese trade and foreign policy in the months following the 20th CCP Congress, neutralising some of the proximate issues noted above, considerable reputational damage had already been done.

In the ambiguous category, we have the distribution of income. One could, of course, make the case that the relationship between economic development and income (in)equality is always ambiguous ex ante (McKay 2016). This taxonomic choice though is specific, not general. While the World Bank's estimate of China's Gini coefficient was lower in 2019 than in 2010, as discussed in the previous chapter (Fig. 8.4), no gains were made between 2015 and 2019, which is the time period in which Xi's first term policies might have been expected to begin to take effect. There is also sufficient uncertainty as to the accurate measurement of income inequality in China that it is unclear whether genuine progress on this deep-seated issue has been made or not. The optimistic angle would be to verify the Gini coefficient trend by cross-referencing the observed decline in corruption, as measured by the Transparency International (2012, 2021) indexes. The pessimistic angle would be to question the veracity of the data, either from the perspective of politics (in the spirit of Goodhart's Law[12]), or from the perspective of wealthier Chinese citizens choosing to systematically under-state their income to the authorities for reasons of personal preservation or tax avoidance (Wang and Woo 2011), and the degree of understatement has increased over the decade. Or to say that the early improvement in the data and the later flatlining is the opposite of what the policy focus should have produced, even if the overall change from 2010 to 2019 feels reasonable.

This long list of positive, negative, and ambiguous signals is important for both comprehending the jumping off points for the suite of strategic scenario pathways outlined in the next chapter and for assessing their plausibility.

Many of these policy and thematic threads come together in Xi's Work Report to the 20th CCP Congress in October 2022 (Xi 2022), and in the 14th 5YP, published at the Two Sessions in March 2021 (Xinhua 2021a). The 5YP is a wide-ranging policy guidance document that runs to 65 chapters and is particularly useful in the context of this study as it atypically included not just objectives for the 2021–2025 period,

[10] This document is a frenetic, wide-ranging rebuttal of a speech by US Secretary of State Blinken (2022) that referenced the debt trap thesis. It is also a useful example of the "wolf warrior" diplomatic mindset.

[11] The Wikipedia page "List of Chinese Spy Cases in the United States" had 157 footnoted references when accessed on 10/11/2022 at 21:15, with most verifying a unique incident. https://en.wikipedia.org/wiki/List_of_Chinese_spy_cases_in_the_United_States_of_America

[12] Goodhart (1975) pointed out that turning any measure or metric into a goal, especially a political one, risks distorting its information value. This critique is frequently levelled at China's GDP statistics (Holz 2013). While no planning document in China ever referenced a Gini coefficient as a target, under the anti-corruption drive all data on income distribution arguably became politicised.

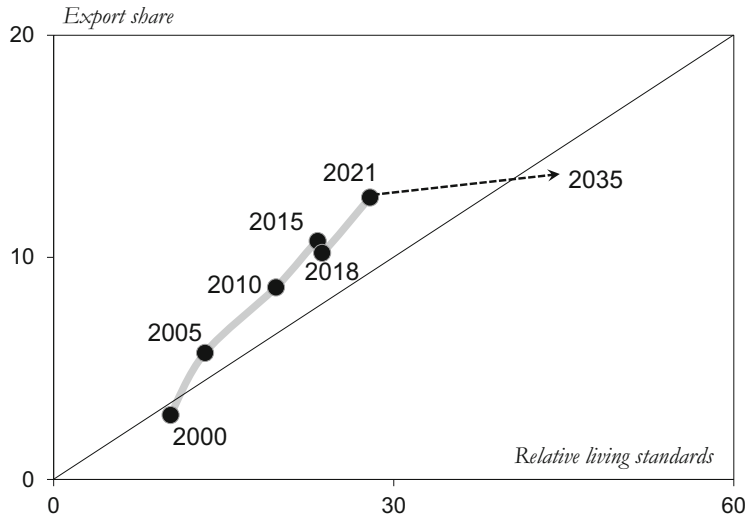

Fig. 9.1 Hypothetical pathways: a smooth transition under "Dual Circulation". Source to this figure: Actual data as for Fig. 7.1. The observation for 2035 is an indicative estimate by the author. Note that the export share is for goods and services, not just merchandise. A 15% share for merchandise alone is quoted in the text above. For additional explanations, see the text

but also longer-term goals, in this case for 2035. These goals include the objective to reach a GDP per capita level consistent with the lower end of the high-income range. Xi's Work Report though has the advantage of being delivered more than a year later than the 5YP, with important information having come to hand in that time.

In advance of an examination of the 14th 5YP and the Work Report, there are some obvious arguments to be made regarding a smooth transition from the old model of the CCP's Second Era to the model that will underpin the New Era. Consistent with the time horizon in the 5YP, the following discussion will consider outcomes between the present and 2035.

The first argument is that if it was unreasonable to expect China to continue consistently gaining export market share at the post-WTO accession rate when Xi ascended, it is even more so now given developments in global trade policy. The unique conditions created by the pandemic, which Chinese exporters leveraged to great effect, do not alter that. It follows that progress in China's relative living standards will have to rely more heavily on domestic sources of growth if progress is to remain smooth. In turn, looking inwards for a larger proportion of growth will, by definition, see export value-added growing less swiftly than domestic value-added.

The above chain of logic would imply that China's strategic pathway under a smooth transition would still proceed through the first quadrant of the *Strategy Grid* but at a more acute angle than the 45 degrees that represents the perfect balance between domestic demand expansion and foreign market share gains (Fig. 9.1). In other words, the most likely route to "success" for China is for its strategic pathway to flatten in the direction of the boundary of the first and fourth quadrants, while

remaining in the former. That, of course, sounds very similar to the stated goals of "Dual Circulation".

The continuation of export market share gains, albeit at a much-reduced rate, would be a sign that the process of dynamic substitution remained intact, as China's comparative advantages continue to evolve as it ascends the ladder in terms of the international competitiveness of its homegrown higher value-added, more technologically intensive products. These gains at the higher end (including in the manufacture of energy transition hardware—sectors in which China has achieved an extraordinarily strong position of incumbency[13]) are likely to be tempered by the loss of market share in labour- and carbon-intensive products as other countries with a stronger comparative advantage in these industries, or less ambitious decarbonisation objectives, step forward. There is also a material risk that foreign firms may look to lessen their reliance on Chinese suppliers to reduce their vulnerability to a single point of failure in the supply chain, hedge their bets on the geopolitical landscape, or they may simply choose to "onshore" more manufacturing capacity reflecting the impact of policy inducements (whether they be carrots or sticks) to do so. Additional complications of potentially impaired export market access due to rising economic nationalism and outright protectionism among China's major trading partners, or a geopolitically inspired slowdown of inward technology transfer that makes progress up the value-added chain slower and less certain (something flagged a decade ago as an unwelcome possibility in McKay 2012), are new risks for China.

The potentially durable nature of these risks is obvious. The US trade war tariffs, instituted by President Trump, have remained in place under President Biden, despite the latter administration prioritising cost-of-living pressures in its first term and Treasury Secretary Yellen acknowledging the likely disinflationary effects of lowering or removing them (Reuters News 2021). The October 2022 introduction of US controls on both the export of high-end semiconductor technology, and on US persons providing services to Chinese entities in this arena, and the US extraterritorial expectations regarding this edict,[14] is another example of the difficulties that China is now facing (Sevastopulo and Hille 2022). The Canadian government has forced the divestment of Chinese interests in three lithium mining companies (McGee and Chase 2022). Chinese telecommunications firms Huawei and ZTE have been excluded from participating in 5G rollouts in many countries on national security grounds.[15] The previously vibrant business of Chinese technology firms undergoing initial public offerings and equity listings in the USA has come under

[13] For example, China has a market share of more than 80 percent in the major segments (cells, wafers, modules, and polysilicon) of the solar panel manufacturing industry (International Energy Agency 2021: 17–18).

[14] The Dutch firm ASML, a semiconductor equipment manufacturer, and the South Korean semiconductor manufacturers SK Hynix and Samsung Electronics, are examples of non-US technology firms that have been strongly advised not to trade with China. See Sevastopulo (2023 and 2023b).

[15] Cybersecurity website www.channele2e.com operates a live list of policies towards Huawei around the world.

attack by US regulators (He 2021) and Chinese regulators. The Biden administration's Inflation Reduction Act, passed in August 2022, which is more about industrial policy and climate action than the title would imply, is also an undisguised attempt to break China's stranglehold on green technology supply chains. This series of observations have a cumulative force.

These challenges and constraints reduce China's margin for error as it embarks on its next strategic kink. If any of these issues are mismanaged, whether through poor policy choices, successful opposition to needed reforms by vested interests at home, or a malignant shift in geopolitical relations, strategic confidence would suffer. With tensions over Taiwan and the South China Sea obvious flashpoints, a closer bond with Russia having been sealed just in advance of Putin's regime being accorded pariah status in the West in the wake of the invasion of Ukraine in early 2022, and overt rivalry with the USA moving from the regional to the global canvas,[16] well in advance of China weaning itself off the US dollar trading system,[17] external risk is certainly elevated.

In Xi's own words from his work report to the 20th CCP Congress in October 2022 (Xi 2022), "Our country has entered a period of development in which strategic opportunities, risks, and challenges are concurrent and uncertainties and unforeseen factors are rising. Various "black swan" and "gray rhino" events may occur at any time. We must therefore be more mindful of potential dangers, be prepared to deal with worst-case scenarios, and be ready to withstand high winds, choppy waters, and even dangerous storms".

Conventional economic risks also abound at home. Xi's formidable power base as of 2023 now makes it harder to foresee vested interests frustrating the transmission of policy from the Centre, as seemed possible at the time of his ascent. This is an ambiguous development with respect to the outlook. If Xi seeks to conduct far-reaching reform, he should face fewer impediments to enacting it relative to his post-Deng predecessors, and that would be a positive. At the same time, the narrower field of view that inevitably comes with an exclusive (and ageing) leadership clique increases both the probability of poor policy choices and their harmful propagation and/or stubborn longevity. With respect to counter-cyclical policy, it has been obvious to many observers that the recovery from the pandemic in the first half of 2023 was inexpertly managed, partly through a lack of pragmatism. Or put another

[16] On this point, the Trump Administration's National Security Strategy of 2017 specifically referred to China as a revisionist, but *regional* rival. The 2022 version specifically referenced China as a threat to the "international order". Biden (2022: 23) states that "The PRC is the only competitor with both the intent to reshape the international order and, increasingly, the economic, diplomatic, military, and technological power to do it. Beijing has ambitions to create an enhanced sphere of influence in the Indo-Pacific and to become the world's leading power".

[17] SWIFT (2023), the global inter-bank payments company, estimates that RMB transactions were around 1.91 percent of global payments in January 2023, down slightly from 2.42 percent in January 2021. That said, the expulsion of Russian banks from SWIFT has handed RMB liquidity an unexpected gift, with bilateral trade between the two economies spiking higher, and the trade is denominated in their own currencies, which bypass the US dollar banking system.

way, the recovery failed to gain traction partly due to ideological positions like "housing is for living, not for speculating" serving to blunt the transmission of policies intended to boost the flagging real estate market.[18]

This risk of an echo-chamber at the top of the CCP leading to counter-productive policy choices is particularly pertinent with respect to SOEs, where ideology and reform collide. Recall the discussion of the reform models of the 1980s and the 1990s in Chap. 7. In the 1980s, SOEs were confronted with competition through the lowering of barriers to entry, but privatisations were not pursued. In the 1990s, privatisations were pursued on a major scale among small and medium-sized SOEs, encapsulated in the slogan "keep the large and free the small" (Sachs & Woo 2001, p. 282). The SOE reforms announced in the second half of 2015 (Wang 2015) have elements of both the 1980s model and that of the 1990s, but are closer in spirit to those of the 1980s. That is a disappointing observation in terms of directly addressing elements of the SOE problem that still exist despite three decades of reform, with the policies of the stimulus era arguably reversing some of the progress made in the 1990s (Geng et al. 2009; Song et al. 2011).

The 2015 SOE reform guidelines (China State Council 2015) made an allowance for the state to exit "competitive industries", while countenancing insolvency in excess capacity sectors and a reduction in public ownership to minority levels in some instances (Wang 2015, p. 2). That is nominally positive. However, the 2015 reform guidelines enshrined, rather than overturned, some of the issues that have historically limited the degree of commercial discipline experienced by SOEs. Wang (2015, pp. 2–3) notes that the 2015 guidelines underline "SOEs as the bedrock of public ownership and socialism", while "precluding any major privatisation"; placing "emphasis on making SOEs stronger and bigger and the possibility of SOEs investing in private companies"[19]; and "strengthening supervision and Party leadership". Referencing the 1980s and 1990s eras again, the 2010s guidelines mirror the 1980s: they imply that private firms can attempt to *enter* profitable SOE dominated sectors, but SOEs will not proactively *exit* through ownership changes. Here, the analysis of Song et al. (2011) shows that the return on assets by industry in China is positively related to the share of state ownership in each industry, reflecting the monopolistic position of the large SOEs in strategic sectors (Fig. 8.14), is highly pertinent.

The concept of "making SOEs stronger and bigger" does not sound as if the titular competition authorities will be granted real power any time soon. In SSSR industries like steel, significant increases in ten-firm concentration ratios have been planned. Large SOEs like China Baosteel and Hebei Iron and Steel have led the charge as the

[18] At the height of market expectations that easing needed to be more decisive with respect to both housing and local government debts, in August 2023 Xi chose to publish a speech made in February in official media (Ma 2023) preaching "historical patience", and reiterating mantras of discipline. This was odd at best, tone deaf at worst.

[19] This was an invitation taken up with enthusiasm in the domestic technology sector.

senior partner in arranged mergers, and/or as the acquirer of smaller private and local SOEs steel mills[20] (Reuters 2016).

"Strengthening supervision and Party leadership" could be seen as positive on the one hand in terms of dis-incentivising graft, but the latter clause of "Party leadership" implies a continuation of the sovereign guarantee of SOE activity that creates a competitive edge over private firms regarding access to capital and other factors of production. Only a clear separation in this regard will serve to achieve a truly market-based allocation of factors that can stand aloof to the imperatives of ideology. That appears to be precisely what Xi does not want.

Naughton (2016) has argued that the SSSR initiative was an opportunity to conduct SOE reform by stealth under the rubric of excess capacity reduction—effectively a process of managing orderly exits. There was a chance to overcome the lack of ambition in the 2015 guidelines to diminish perceptions of SOE preference and to root out "zombie" firms, which are predominantly SOEs. The opposite effect though has been produced, especially for central SOEs. The high-profile interventions in big private tech companies that characterised the early 2020s also pointed the other way. If the primacy of large SOEs is a matter of unshakeable faith for Xi and his inner circle, an important vehicle for unlocking productivity growth could be left latent.

9.3 Alternatives to a Smooth Transition

There is more than enough evidence to justify thinking concretely about what the alternatives to a smooth pathway towards the 2035 goals might be. In the orthodox development literature, a stunted development pathway that occurs in the vicinity of China's current standard of living is dubbed a "middle-income trap" (Fung & Yao 2014; World Bank and Development Research Center of the State Council 2012). A country can sleepwalk into this trap and succumb like the proverbial "boiling frog". Or the trap can snap closed abruptly due to a painful economic downturn that (for whatever reason) does not precipitate reform, and from which strategic confidence never fully recovers. Another potential outcome is that China goes through a painful economic downturn and is forced to reform in fast forward rather than in the preferred (and successful) historical mode of gradualism—something akin to the experience of South Korea during and immediately after the 1997/98 Crisis. Reforms adopted (or imposed) in extremis can build a base from which the economy eventually rebuilds under an altered sub-strategic mix. Note that the analogy, in this

[20] The SSSR plan for the steel industry included ambitious targets for reducing overall capacity. The only way for a firm to increase capacity under these strictures was to acquire another mill and shut it down. This was known as the "capacity swap scheme". See McKay (2018) for further discussion of steel industry SSSR.

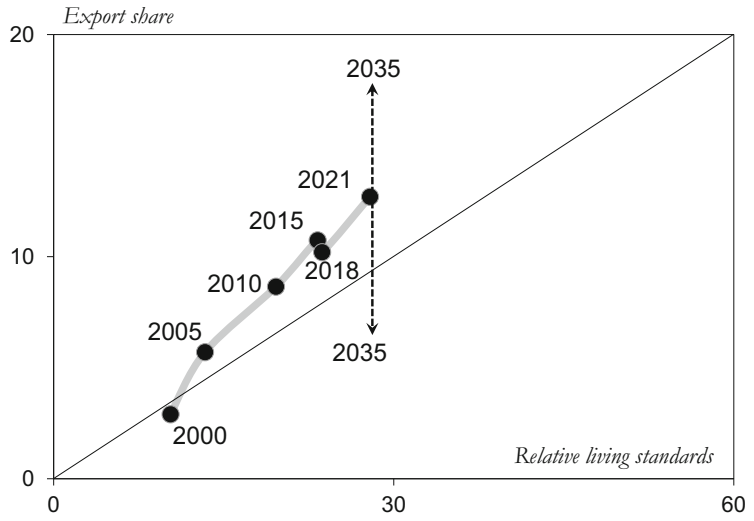

Fig. 9.2 Hypothetical pathways: middle-income trap. Source to this figure: Actual data as for Fig. 7.1. The observations for 2035 are indicative estimates by the author

case, is Korea's impressive response to Crisis, not that China is threatened with a similar sort of imbalance that could precipitate a disruptive unravelling.[21]

Enduring a recession is not enough for the middle-income trap to close tight—it is the strategic response to the downturn, and how that plays through the dynamics of the *Strategic Alternator*, that matter for a nation's medium-to-long run pathway. Figures 9.2 and 9.3a and b depict indicative hypothetical pathways under a selection of adverse assumptions.

Figure 9.2 illustrates that a range of export share outcomes are consistent with an end of progress on the horizontal access. It is quite possible for a country to find itself growing no faster than the frontier at a relative income of, say, 30%, but it continues to increase its share of world exports. Such circumstances might emerge where excess capacity to produce tradable goods has been accumulated during the catch-up phase; or a resource-rich economy run by an oligarchy may put a ceiling on relative income through their egregious rent-seeking activities. The downward deviation in export share at a constant relative income level might result from a failed import substitution strategy that destroys international competitiveness. Or a nation may be locked out of markets due to geopolitical motivations, whether by traditional protection like tariffs, or by geo-economic tools, like sanctions.

Figure 9.3a and b has one extra data point vis-à-vis the archetypal middle-income trap scenario, as abrupt retrenchments tend to follow a build-up of unsustainable

[21] The relative vulnerability of Korea to foreign financing in the late 1990s, contrasts vividly with China's ample current account surplus today. China could potentially have a financial crisis, but it is unlikely to be triggered externally.

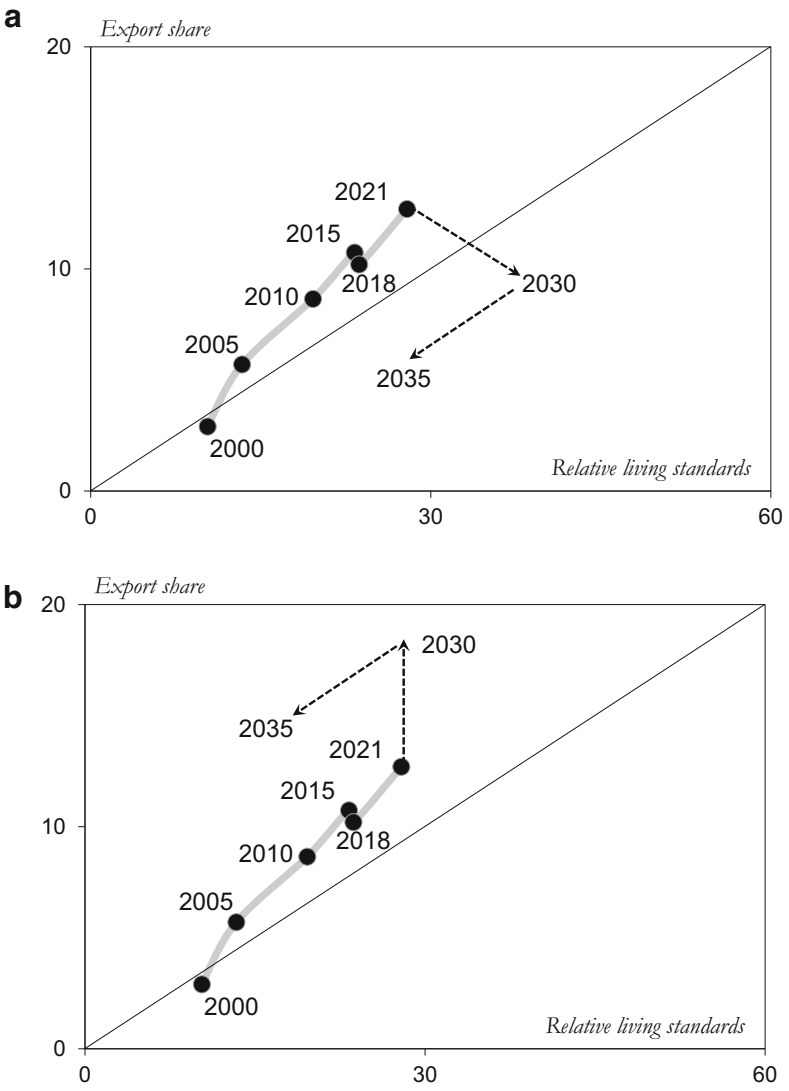

Fig. 9.3 (**a**) Hypothetical pathways: Abrupt retrenchment following a domestic demand-dependent kink. (**b**) Hypothetical pathways: Abrupt retrenchment following an export-dependent kink. Source to Fig. 7.11a and b: Actual data as for Fig. 7.1. The observations for 2030 and 2035 are indicative estimates by the author

imbalances that unwind violently and disrupt activity and the asset price level (and strategic confidence) accordingly. The examples presented—a domestic demand-dependent kink and an export-dependent kink—both explicitly assume that the first phase is built on shaky foundations. While genuine export dependence is never likely to end well for a very large economy, it is usually non-fundamental domestic

demand-dependent kinks (fourth-quadrant strategies) that do the most ultimate damage. That is due to the stock of liabilities that builds up based upon the *faux* strategic confidence associated with such phases. The *Strategic Alternator* is built on expectations for asset prices and confidence, with feedback effects running both ways. If asset prices are being driven higher by a monetary mistake, for instance, and this is often only evident with the benefit of hindsight, the *Alternator* will function just as if the signal was a fundamental one. And the outcome is tragic—a mountain of debt secured by collateral that is suddenly revealed to be worth far less than it was acquired for and valued on balance sheets ex ante—alongside a collapse in the value of unsecured equity. The example of Japan's 1980s bubble, detailed at length in Chap. 4, is highly instructive in this regard.

9.4 The Strategic Record: The 5YP Plan and Xi's Work Reports

And so, to the 14th 5YP, which is the major source document for how China will seek to achieve a smooth transition and avoid the alternatives. The long-term section of the document puts forth the following aspirational goals:

> Looking forward to 2035, my country will basically realize socialist modernization. Economic strength, scientific and technological strength, and overall national strength will rise sharply, the total economic output and the per capita income of urban and rural residents will reach a new level, the key core technology will achieve major breakthroughs, and it will enter the forefront of innovative countries. Per capita GDP has reached the level of moderately developed countries, middle-income groups have expanded significantly, basic public services have been equalized, and the gap between urban and rural regional development and the gap in the living standards of residents has been significantly reduced (Xinhua News: 2021a).

In short, by the middle of the 2030s China hopes to have developed to the point where it is on the edge of the strategic core, measured both by conventional living standards and by the fact that it will "enter the forefront of innovative countries" (ibid). The felt experience of the people will also have improved greatly, with inequality reduced across multiple economic, spatial, and social dimensions. Arithmetically, a GDP growth rate of 4.7% between 2021 and 2035 would achieve the income objectives embedded in the plan (Lin 2022: 37).

How will this be achieved? By a focus on developing a competitive indigenous innovation system, by addressing some of the distortions and imbalances of the historical growth model through the many aspects of "common prosperity" and pursuing an introspective tilt in terms of demand drivers under the auspices of "dual circulation"—while being more selective regarding international circulation.

The second chapter of the 14th 5YP is dedicated to innovation. It opens with the statement "Adhere to the core position of innovation in the overall situation of my country's modernization drive, take scientific and technological independence and self-reliance as the strategic support of national development". That is a clear

statement of intent that China seeks to reduce its reliance on technological transfer as a means of moving up the value-added chain: it wants to innovate at home.

Can it? Let us consider the strategy. Chapter 2 of the 5YP proceeds to outline approaches to basic and applied research, sets targets for the share of research & development (R&D) spending that should constitute basic research, nominates strategic areas where resources can be concentrated, the use of tax and other incentives to encourage activity, and introduces the concept of tolerance for error in SOEs to spur more innovative behaviour.

Specifically, the 5YP identifies: "cutting-edge fields such as artificial intelligence, quantum information, integrated circuits, life and health, brain science, biological breeding, aerospace technology, and deep seas, we will implement a number of forward-looking and strategic national major scientific and technological projects. Proceeding from the urgent and long-term needs of the country, we will concentrate superior resources on key core technologies in the fields of prevention and control of emerging infectious diseases and biosafety risks, medicine and medical equipment, key components and parts and basic materials, and oil and gas exploration and development".

Complementing the 5YP, Xi's 2022 work report increased references to "technology" by 92% from the 2017 version, with references to "education" up 45% and "innovation" itself up by 21% (Table 9.1). Interestingly, the term "modern" saw a 51% uplift in usage, with absolute usage higher than "security"—a term that received considerably more attention among analysts of elite politics.

There is a sense from the 5YP and the work report that China will not fail in innovation and technology for want of resources or hard work. The key question is the extent to which a heavily state-directed, top-down programme can deliver the creativity and inspiration to leverage the undoubted support is another question. In the wake of the "Two Sessions" in March 2023, the CPP set up a new body, the "Central Science and Technology Commission" under the reorganised Ministry of Science and Technology. Hofman (2023) argued that "The new Party Commission aims to centralize leadership over science and technology, and consolidates the powers of 4 now-abolished leading groups in the field. The Ministry of Science and Technology is repurposed from an implementer to a funder and policymaker for research and development. Other ministries, national laboratories, universities and companies are to implement the policies to achieve China's goal of indigenous innovation—i.e. less dependence on foreign technology".

Further, Hofman, a recently retired World Bank official in the country, argued that it is not immediately clear what problem the creation of the new Commission was trying to solve. Noting that some duplication of effort might be avoided by more centralisation, he also noted that China's historical approach to industrial policy has been significantly more decentralised. That is a very important point. It was *competition* between administrative units and between officials that helped create the industrial policy ecosystem that, along with the entrepreneurial zeal of China's private sector, built the manufacturing powerhouse (McKay and Song 2010). It was not sophisticated technocratic coordination, or an orderly allocation of grants based on a list of central priorities, or patriotic entreaties.

Table 9.1 Word use in Xi's Work Reports to the 19th and 20th CCP Congresses

Sorted by largest % changes	2022	2017	Percent change 2022 versus 2017
Hegemonic	4	1	300
Insurance	15	5	200
Medical	14	5	180
Economic growth	13	6	117
History	49	23	113
New development philosophy	4	2	100
Technology	23	12	92
Security	80	43	86
Risk	16	9	78
Problems	35	21	67
Marxist	30	19	58
Modern	92	61	51
Income	22	15	47
Education	42	29	45
Employment	17	12	42
Officials	45	32	41
Common prosperity	7	5	40
Pollution	7	5	40
International	40	29	38
Innovation	29	24	21
Sovereignty	6	5	20
Influence	6	5	20
Global governance	6	5	20
Corruption	26	22	18
New era	39	34	15
Development	183	165	11
Health	22	20	10
Cooperation	24	22	9
Defence	21	20	5
Cold war	1	1	0
Law	87	92	−5
Leadership	50	53	−6
Peace	26	28	−7
Market	19	21	−10
Strength	104	118	−12
Governance	66	80	−18
Rejuvenation	24	30	−20
Environment	31	39	−21
Socialism	119	150	−21
Party	263	341	−23
Power	34	45	−24
Reform	54	72	−25

(continued)

Table 9.1 (continued)

Sorted by largest % changes	2022	2017	Percent change 2022 versus 2017
Culture	40	56	−29
Progress	26	40	−35
Poverty	11	18	−39
Deng	1	2	−50
Belt and road	2	6	−67
Mao	1	3	−67
Dream	6	31	−81

Source: Author calculations from Xi (2017, 2022). Terms with same root, such as Marx-ism and Marx-ist are collated as a single entry

There will be no shortage of pressure on the research complex to deliver—and there is a proverbial "burning bridge" in the form of the US export bans to focus the mind. Yet the reality of China's New Era political-economy under Xi and the innovation requirements of its unfolding strategic mix could well be argued to be uncomfortable bedfellows.

This theme is not just relevant for 2035—it is relevant for the remainder of the twenty-first century. And that is where we turn in the final chapter.

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Chapter 10
China in the World-System: Strategic Pathways to 2100

10.1 Introduction

China's future strategic pathway and its consequent place in the world-system over the remainder of the twenty-first century is highly uncertain. While the DST has substantial and unique powers as a tool of prediction over long time horizons, it feels imprudent at this fluid moment in history to deploy those tools to construct a single path or choice of (anti) strategic mix. Instead, consistent with the emerging discipline of foresight,[1] this work will conclude by presenting a suite of divergent put plausible strategic pathways composed within the DST tradition as a way of framing, as opposed to resolving, the uncertainty. These pathways are the culmination of all that has come before.

The chapter will proceed as follows. The first task is to introduce scenario building blocks—labelled ***Shadow***, ***Song*****,** and ***Schism*****,** respectively—in narrative form. The second is to describe the quantification of the narratives within the confines of the *Strategy Grid*. The third is to discuss the implications of these potential Chinese pathways for the development of the world-system through the remainder of the twenty-first century, and China's relative and absolute positioning as the twenty-second-century dawns.

There are approximately 80 years remaining in the twenty-first century. This time is divided into two 40-year phases: 2021–2060 and 2061–2100. The year 2060 will feature a strategic kink in each pathway. Whilst there is a respectable case for

[1] "Foresight" is differentiated from "forecasting". It has become intimately associated with scenario analysis, as pioneered by the Royal Dutch Shell oil company, and increasingly deployed in the government and corporate worlds to frame long-term uncertainty. It has no theoretical underpinning as such, but it has an evolving method that is sufficiently academically respectable to be taught in places like the Said Business School at Oxford. As an aside, an excerpt from Xi's 2022 work report in the previous chapter used two terms that are now part of the scenario lexicon: black swans and grey rhinos. That is a hint that these techniques have now permeated the commanding heights of the CCP.

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choosing the year 2060 for the kink in that it coincides with the timing of China's carbon neutrality goal, and there is also some elegance in the 40-year timespan given the platform presented to Xi over the 40 years of "reform and opening-up", but beyond these coincidences there is no precise empirical basis for this temporal breakdown. Practically speaking, 40 years is a useful time period as it is neither too short to allow an initial strategic kink to fully play out nor is the first period too long to allow for the same to occur again after a second kink, and then fully unfurl itself by 2100. To be very clear, this periodisation is not influenced by any extant school of thought on long waves, cycles, or the like, whether rhythmic or arhythmic.[2] Also, these long-run pathways are independent of the hypothetical sketches of the outlook to 2035 in the previous chapter. They describe trend rates of progress-regress, and do not attempt to model sub-phases.

The combination of China's distinctive political-economy and its relative distance from the strategic core today arguably presents a wider field of plausible pathways than one might plausibly hypothesise for a large, developed democracy, such as the USA. That is because enduring *anti*-strategic kinks under the Industrial paradigm are more plausible in a system with ideological rigidities in governance and opaque methods of transferring executive power and judicial procedure. This set of pre-conditions creates ambiguity with respect to the resolution of competition over the (anti) strategic (and sub-strategic) mix. Outcomes across the entire spectrum ought to be deemed plausible in a society like China (or in any society with high levels of ambiguity attached to the fundamental matters of governance, power transfer, and rule of law). By contrast, in societies where a successful strategic mix is unambiguously led by technological change, and supporting institutions have developed in service of that, with very little ambiguity on the transference of executive power and the role of the judiciary, anti-strategic outcomes can be plausibly excluded.[3] For China, a plausible anti-strategic case will be encapsulated in the ***Schism*** narrative (see below).

So, an anti-strategic mix is plausible and will feature in the suite. So too is a successful long-run pathway characterised by the unfurling of a conventional development pathway under the Industrial paradigm, fuelled by a relatively orthodox "latecomer" strategic mix with a Sinitic flavour. Given that the scale of the catch-up

[2] This literature is of course voluminous. See footnote 8 in Chap. 2.

[3] Excluding an anti-strategic regression from a plausible range is not the same thing as saying it is impossible. Snooks (1997, 1998b) highlights this possibility and even codified it as a secondary Law of History: the law of dynamic regression (see appendix). Quoting from chapter one of this work *"Strategic sequences are not pre-determined. That historical fact, … is a fundamental challenge to linear progressive views of institutional change. The observed reversibility of institutional "progress" (usually summarised as "democratisation") in societies that change strategic direction towards conquest from either commerce or technological change—the examples of ancient Greece during the fifth century BCE, Venice in the fifteenth century CE and twentieth century fascism in Europe and Japan stand out in this regard—indicate that the weight of history is against universal progressivism"*. As troubling as domestic politics can sometimes be in the developed democracies, there are many institutional checks and balances that work to prevent a slide into either an irrational modern conquest strategy or an enduring anti-strategic policy mix.

opportunity facing China is still considerable (Lin 2022), this should not be controversial in and of itself—although the point in time where catch-up dynamics fatigue and relative stagnation versus the frontier begins (what the abstract neoclassical growth model labels the steady-state) is certainly worthy of considerable debate. In the scenario suite, the optimistic vision for China is encapsulated in the ***Song*** narrative (see below).

Song and ***Schism*** therefore represent the optimistic and pessimistic plausible bookends of the suite. ***Shadow***, which will be introduced in due course, sits closer to the middle of the spectrum.

On terminology with respect to likelihood, none of the abstract pathways and their constituent parts should be seen as probable exactly as described. All though are designed to be deemed plausible to students of history and economics with a sophisticated grasp of the scale of change that can occur across multi-decadal timescales. They are designed to be overtly challenging to the orthodox observer, but they are not intended to be absolute best or worst cases. If they were, a narrative would have been devised that took China into the third quadrant of the *Strategy Grid* in the initial phase; or a durable 45 degree first quadrant strategy would have been hypothesised across both phases. The fine line between what is possible and what is plausible will be developed in the discussions below. To distinguish still further in advance of that, within the plausible range one should anticipate narratives that conjure filaments of verisimilitude. For a narrative that is merely "possible", such filaments may still exist, but they are much more difficult to find, or the extent to which they are realistic may be controversial.

It is expected, and welcomed, that different readers will assign subjective probabilities to the narrative worlds that underpin each pathway. The objective of the exercise is to present a wide range of outcomes for China's future strategic mix, quantify them within the *Strategy Grid* and derive inductive insights accordingly. It is not to express and proselytise an a priori opinion or to formally assign classical probabilities that elevate one hypothetical pathway above the rest.

10.2 The Narrative Worlds on which the Pathways Are Built

To recap, the eight decades remaining in the twenty-first century are divided into two 40-year phases: 2021–2060 and 2061–2100. The year 2060 will feature as a strategic kink in each pathway, with a switch from one narrative world to another. On terminology, a *pathway* covers the entire 80-year period: there will be four pathways in the suite, reflecting four unique pairings of three *narrative worlds*, or *building blocks*. A *phase* is one 40-year period in which a single narrative world plays out.

10.2.1 Schism

Schism is an extreme but plausible world where China progressively adopts an anti-strategic, autarkic *modus operandi*, and (in sequence) rapidly retreats from global and then regional ambitions for any kind of primacy or hegemony. The isolationist withdrawal is hypothesised as a pre-emptive choice by the CCP that is seen as necessary for its superordinate goal of long-run survival, front-running the time (by some decades) at which the contradictions between China's institutional framework and the needs of a successful, high-income twenty-first-century society become wholly untenable. In short, if the projected change in society is perceived to be an existential threat to the CCP, then it may attempt to forestall that change while it still has the means to do so. The cost of this form of CCP survival in ***Schism*** is a huge counterfactual shortfall in long-run living standards—something akin to the more pessimistic productivity prognoses in Lardy's *The State Strikes Back* (2019) allied to an isolationist foreign policy that is poetically akin to a modern rebirth of the Ming, with something like a tributary trade maintained. The highest relative GDP per capita achieved by the only other "world-system relevant" anti-strategic society in the Industrial era—the USSR—will serve as a key target variable in the quantification of ***Schism***. This narrative of course implies that China would not join the core of the world-system, let alone achieve anything approaching a hegemonic position.

This building block is not far removed from the naïve caricatures of the Chinese state that circulate in some segments of the Western media and political discourse. Caricatures though are not conceived in a vacuum—they exaggerate and warp reality but they are originally inspired by it. It is certainly controversial to posit that in the global cyber age, which the Chinese people have embraced in so many positive ways, and with full knowledge of China's deep integration in cross-border supply chains as the *sin qua non* in the global division of labour in the early twenty-first century, that ***Schism*** could realistically occur. China is the world's largest exporter of merchandise, after all, and shows little sign of de-emphasising international competitiveness in its industrial policy frameworks. But ideologically and politically, it does not feel completely far-fetched. Dual Circulation, the ubiquity of "decoupling" jargon inside and outside China, and the multiple recent instances of Chinese economic coercion—which inflict economic damage on China and its counter-party—might well be caricatured as a very mild rehearsal of what ***Schism*** is describing. Mao's major anti-strategic interventions launched in the 1950s and 1960s were made possible in part by the lack of restraint that pervades under a cult of personality—with the Third Front (Chap. 6, Sect. 6.6) an antecedent for the autarky embodied in ***Schism***. As China moves further away from collective leadership and congeals around Xi Jinping as the CCP's "core" the abstract chance of an anti-strategic tilt increases.

In this regard, it is important to recall that none of the narrative worlds described here are expected to endure beyond four decades before giving way to a new phase. ***Schism*** can be usefully thought of as the worst of the plausible cases for the Chinese

people in either of the two phases of the hypothetical analysis, where the leadership chooses an anti-strategic path that is at odds with the DST and is able to pursue it without being evicted from power. History is very clear on the point that anti-strategic regimes do not survive in perpetuity, but four decades is far from a stretch. The two major exit options from an anti-strategic posture are a tilt back towards a strategic path (as China did from 1978 forward), and systemic collapse (the USSR). In the pathway where ***Schism*** covers the first phase, we impose the former exit route (i.e. a strategic kink) for the second phase. Worse outcomes than ***Schism***, such as a reversion to China's pre-Industrial reality of periodic retreat from centralised empire to civil war and regional fragmentation, or revisiting the humiliations of the century leading up to the founding of the PRC, or a 1990s Soviet-style hyperinflationary economic collapse, are characterised as implausible.

There is a potentially counterintuitive aspect to ***Schism*** despite the pessimistic tone of the narrative: China needs to continue *gaining* on the frontier in the coming decades to achieve the target variable. That is because the target GDP per capita variable in ***Schism*** is higher than China's relative positive today. The 37% of the frontier that is the target for 2060 (9 percentage points higher than China's 28% starting point as of 2021, with a compounding convergence factor of ~0.7% from 2021 to 2060) is derived from the average position achieved by the USSR during the 1970s. For the USSR, achieving a relative living standard that averaged 37% in the 1970s represented a gain of around 16 percentage points over the prior 40 years and around 8 percentage points in the prior twenty: basically, the same task that China has ahead of it in this hypothetical. Conveniently, the USSR's relative living standards in 1950 (29%) near the outset of the Cold War approximate China's today at the outset of the period of geopolitically "choppy waters" Xi referenced at the 20th CCP Congress.

Snooks (1997, pp. 440–464) argued that the USSR was a wholly anti-strategic entity throughout the period described above, and with hindsight, that seems self-evident. And yet, such are the "advantages of backwardness" (Gerschenkron 1962), that an ambitious anti-strategic state that commands considerable productive resources can still make headway towards the frontier. Specifically, a skewed resource allocation system can produce impressive rates of input-led quantitative expansion that mimic the outcomes of a strategic society—quite compellingly to even sophisticated observers[4]—for decades at a time.

[4]Contemporary observers of the Soviet economy in the decades prior to the collapse of the USSR were divided on its precise long-run prospects, but they were united in not anticipating the reality, which was that it was destined for ignominious collapse. See the commentary in Snooks (1997: 463), and Levy and Peart's (2009) fascinating study of the treatment of the Soviet economy in US economics textbooks over time, including Samuelson's, which tended towards considerable over-estimation of both the historical and future size and growth of the USSR. Listening a few years ago to a pair of distinguished American economists competing with each other for the status of who was more bearish on China's economic prospects, I reflected on the idea that the American economics profession may be sub-consciously determined to never again be fooled in such a fashion. The benefit of a general dynamic theory of course is that it enables internally consistent predictions

Despite paying little heed to market signals or consumer demand, the USSR was able to gradually gain on the frontier through its investment-led model: before the patent inefficiency of command planning allied to the unwieldy rent-seeking apparatus of the Soviet socio-political system collapsed as the strain of Great Power competition laid its internal contradictions bare. China is a far more formidable strategic proposition today than the USSR ever was, nuclear capabilities and natural resource endowment notwithstanding, as away from the state-controlled commanding heights it has built a dynamic and entrepreneurial industrial, e-commerce, construction, and logistics system that sits comfortably within the *Strategic Alternator* model, despite the political context. Is it implausible to hypothesise that China can do at least as well as the USSR did at its apex, even if the CCP were to pull the nation into an anti-strategic posture over the next 40 years? No. It is plausible.

More intuitively perhaps, when ***Schism*** is applied in the second phase of a pathway, a considerable regression in relative living standards is assumed when the starting point is a higher relative position versus the frontier.

10.2.2 Song

The second narrative world, ***Song***, is diametrically opposite to ***Schism***: it is the best plausible case for the Chinese people. ***Song*** hypothesises that China's response to heightened rivalry and Great Power competition will not be a defensive manoeuvre—but an economic and technologically assertive one. The name is transparently inspired by the innovative response to external competitive pressures under the Song (Chap. 5, Sect. 5.3), which saw China's traditional neolithic strategic mix temporarily re-ordered. ***Song*** posits that the *Strategic Alternator* is unleashed in a virtuous fashion as China attempts to sprint towards the technological frontier through indigenous innovation efforts, with the competitive spur of rivalry a powerful accelerant. The state continues to play an important complementary role in allocating real and financial resources in the civilian economy through a forward-thinking industrial policy, but it manages to do so without stifling the entrepreneurial zeal of the Chinese people. Spillovers from a handsomely funded defence and mixed-use technology ecosystem spur the civilian economy further.

A critical logical leap on the road to envisaging ***Song*** is that the ability to sustain this strategic mix would eventually require changes in China's political-economic make-up that go far beyond the cosmetic. This in turn implies that a very different CCP would have to emerge to underpin this pathway, with a tilt towards greater political voice and inclusion. Exactly how much of a tilt? There are some instructive examples among China's neighbours: societies that have shown the ability to thrive and reach high-income status, steered by an elite bureaucracy, while limiting

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across time and across societies. There is no need to error-correct based on a naive form of historicism.

political competition internally. At a minimum, to complement ***Song*** the CCP would likely need to build a polity something like the Singaporean model of benevolent, technocratic single-party rule in a weakly contested democracy with stage-managed transfers of (highly competent) executive leadership, planned over decades. One might glibly think of this as an extension of the CCP's post-Mao, pre-Xi era of collective leadership, but without term limits. Democratic processes would gradually increase in importance and prominence—first as intra-party democracy within the CCP as a complement to existing selection norms.[5] Or as a further step removed from the status quo, it is possible to envisage a weakly contested democracy that produced something like the Liberal Democratic Party's (LDP) dominance of Japan's constitutionally democratic politics between the end of World War II and the bursting of the Bubble in the 1990s. In both the Singaporean and Japanese examples, competition within the political structures has served as a proxy for genuine pluralism and has been sufficient to carry these impressive nations close to the living standards frontier.

Working against the above discussion is the fact that Xi has already rolled back the tentative intra-CCP democratic reforms seen under Hu-Wen, in favour of "strongman rule" (Shirk 2023: 90–93, Chap. 7). Assuming Xi's aversion to intra-CCP democracy continues, and his health enables him to serve for as many as three more 5-year cycles as leader (taking him to the age of 79 in 2037),[6] his presence makes this pathway more likely to arise and endure in the second phase of the century than the first. That said, Xi's behaviour and choices have confounded the expert consensus many times, most recently with his triptych of U-turns on zero-COVID, housing, and foreign policy in the wake of the 20th CCP Congress. Who is to say that further profound shifts are not possible?

The prize for a pro-strategic transmogrification of the CCP in ***Song*** would be a tremendous uplift in China's long-run living standards. The peak relative GDP per capita achieved by the most successful non-European latecomer in the Industrial era—Japan[7]—serves as a key target variable in the quantification of ***Song***. The specific target variable is 85% of the frontier, with a compounding convergence factor of ~2.9% from 2021 to 2060. That of course implies considerable progression towards the core of the world-system, and ultimately membership of the same, without caveat, on both income and scale dimensions.

On the plausibility of that outcome, it is certainly controversial to posit that a society with such a large proportion of the world's population could also rise to be among the world's wealthiest nations on a per capita basis. Prima facie, the arithmetic of that in terms of what it might mean for other societies is a formidable

[5] See the discussion in Shirk (2023: 90–93) on intra-party democracy.

[6] This hypothetical scenario was verbally communicated by more than one scholar at an international conference attended by the author in the immediate aftermath of the 20th CCP Congress.

[7] Singapore is excluded from this debate due to its lack of scale. South Korea has recently exceeded Japan in GDP per capita (Katz 2022), but it has never achieved an equivalent position of relevance in the world-system or been seen as a realistic challenger to the leading power, as Japan was in the 1980s.

challenge. That would go somewhat beyond what I have previously described as China "making room for itself" (McKay and Song 2010). Put another way, combining scale and per capita wealth in this way is very rare, and the ability to do so would endow hegemonic potential on the society that achieves it: or regional primacy at a minimum. The USA is a case in point. It simultaneously houses the world's third-largest population while enjoying the highest GDP per capita of any large economy.

With America as an example, is it outlandish to hypothesise that the nation with the second largest population (noting India surpassed China's population in the early 2020s, and will continue widening the gap) could be *among* the high-income group, if the third largest population has shown it can sustain a position at or near the absolute top for more than a century—and counting?

Comparing any economy directly to the USA feels like it is stretching the bounds of credulity: even when the economy in question has already achieved two critical scale parameters that only the USA has achieved in the post-World War II era. Those thresholds are (a) comprising more than 11% of world exports and (b) comprising more than 18% of world GDP. (And in China's case, it has surpassed that export share by some margin). Theoretically then, taking all of the positive progress on indicators of long-run growth potential made during the Xi era, extrapolating further gains in each of them in the coming decades, and de-emphasising the long list of negative indicators that have grown alongside them, including the deep-seated political-economic contradictions, and you have . . . a Leviathan. That sequence of assumptions feels like a stretch, because it is. Recall though that this is not an attempt at establishing a central tendency: it is the bookend of a very wide range. Moving away from the USA and questions of global primacy for a moment, it is useful to recall once again that the target variable for ***Song*** is derived from Japan. It is China's vast population that skews the economic scale equation to an extremity, not the use of the Japanese analogy itself: the justification for which is surveyed in detail earlier in this work.

Japan's peak within the world-system as China's best plausible analogue and the USSR's peak as the worst: those are the building blocks of the range.

10.2.3 Shadow

A third narrative world is now required to complement the bookends of ***Schism*** and ***Song***. Herewith, we introduce ***Shadow***. The term ***Shadow*** is inspired by Snooks' application of the DST theory to the Chinese model (Snooks 2020), and his clever use of Plato's "Simile of the Cave" (Plato 2003: book VII, pp. 240–248). In this suite, ***Shadow*** represents a world where China's indigenous innovation engine makes very respectable progress given it was only recently a distinctly backward economy, but it never becomes truly competitive with the frontier. Once conventional catch-up opportunities are exhausted, China's long-run living standards will become dependent on its own technological attainments, with any upside beyond

Table 10.1 Long-term projections of China's relative GDP per capita

	% of USA	Year of forecast	Year published
OECD 2014	46	2060	2014
OECD 2021	51	2060	2021
PWC	50	2050	2017
China 2049	67	2049	2020
SSP 2	77	2060	2017
SSP 3	54	2060	2017
SSP 4	63	2060	2017
Median	54		
Mean	58		

Sources: OECD (2014a, b, 2021), PWC (2017), International Institute of Applied Systems Analysis (2017, 2018), Dollar et al. (2020)

that capped by both its own political-economic contradictions and the mercurial goodwill of others to diffuse their leading innovations. This places a ceiling on China's long-run relative GDP per capita—and China's more technologically adept rivals are essentially empowered to choose that ceiling (more or less) through their willingness to engage commercially with China on intellectual property and technology transfer.[8] The specific target variable in this regard is the average relative position achieved by the lower end of the high-income economy bracket—the fringe of the world-system core—since China's opening up. This calculation rounds to 55%, with a compounding convergence factor of ~1.7% from 2021 to 2060.[9]

The plausibility of this narrative is drawn from a range of sources. It accords relatively closely with conventional wisdom on China's long-run economic growth prior to the outbreak of the global pandemic, as shown by the mean (58%) and median (54%) of the sample of long-term projections presented in Table 10.1. As I ventured in McKay (2016), as the discussant of a conference paper speculating on the likelihood of China falling into the middle-income trap: "Is there something of a Sinitic glass ceiling for GDP per capita? Some in the long-term projection game would have it so". For instance, the OECD (2014a, 2014b) argued in a 50-year outlook published in advance of the USA–China trade war that "China will experience more than a sevenfold increase of its per capita income over the coming half century, though living standards will still *only be 60% of those in the leading countries in 2060*" (Emphasis added). Specifically, against the USA, China was projected to reach 46% of US levels in 2060. That is some way below the directly calculated target variable used in the quantification of ***Shadow***. However, the

[8] This scenario does not explicitly incorporate the possibility of technology being transferred in illicit ways. The assumption is that this would be an unsustainable strategy and would be extraordinarily difficult to execute on the economy-wide scale required. It would also be difficult to adopt the technology itself, given the inadequacy of tacit knowledge transfer that would presumably characterise clandestine flows.

[9] As foreshadowed in the discussion of equation 3.9, this estimate is distinct from the concept of Π in the formal theory.

OECD's updated outlook for 2060, published in 2021 under the shadow of the COVID-19 pandemic and in a febrile geopolitical climate, increased China's relative GDP per capita to the USA in 2060 to 51% (OECD 2021). Similarly, in 2017 consultancy PWC projected China's relative GDP per capita to the USA to reach 50% in 2050 (PWC 2017).

Another interesting benchmark is the *China 2049* study (Dollar et al. 2020), authored by two prominent Mainland economists and a former head of the World Bank in the country, which concluded that "under reasonably favourable conditions, China's GDP per capita—using purchasing power parity (PPP) measures—relative to that of the United States may rise from about one-quarter in 2018 *to around two-thirds in 2049*" (Ibid: 2, emphasis added). The scenario work of Russian economists Grinin et al. (2014), who argue that China is unlikely to ever rise to the status of world-system hegemon, is also in sympathy with this broad conclusion.

Another source of long-run projections is the scenario set of "shared socio-economic pathways", or SSPs, produced by the International Institute of Applied Systems Analysis (2017) to underpin global climate change analysis. SSPs 2, 3, and 4 from version 2.0 of the database (International Institute of Applied Systems Analysis 2018) project Chinese GDP per capita to reach 77%, 54%, and 63% of US levels in 2060, respectively (author calculations using data downloaded from ibid).

These credible projections from a variety of sources pointedly stop short of placing Chinese GDP per capita in the forefront of global living standards, despite most having been compiled prior to the overt outbreak of US rivalry, and all being published before the imposition of sweeping high-tech export controls. Basing one narrative world on the idea that there may be a "Sinitic glass ceiling", even under a relatively benign world-system backdrop, feels prudent on this evidence.

It is instructive to recall the following observations from the previous chapter. "Contrary to its strong performance in many other standardised global measures of economic vitality, China made virtually no progress between 2010 and 2019 in the World Economic Forum's Global Competitiveness Index, being ranked 27th and 28th in those respective years (World Economic Forum 2019), or in the World Bank's Logistics Performance Index between 2010 and 2018 (World Bank 2010, 2018) where its rank was also basically unchanged at 26–27th (despite an improvement in the infrastructure subset, as detailed above)". Looking at the latest reading for the latter index (World Bank 2018), the countries on either side of China in this ranking are the Czech Republic, Portugal, Luxembourg, South Korea, Taiwan, Poland, Ireland, Qatar, and Hungary. With the exception of Qatar (a petro-economy) and Luxembourg (not far above the scale of a micro-state), these economies share one critical thing in common: they are jostling at the fringes of the world-system core in terms of relative living standards. It does not feel unreasonable to say that this may be the company that China is destined to keep.

Moving beyond conventional economic forecasting, the idea that frontier economies may seek to curtail Chinese technology imports is not a supposition: it is a fact

enshrined in the current trade, national security, and foreign policies of the world-system hegemon, the USA[10] (Biden 2022; Blinken 2022; Sevastopulo and Hille 2022; Sevastopulo 2023a, 2023b). The idea that this curtailment would focus on the very high-end technology that distinguishes the genuine frontier players, rather than on the more generic flows of low and middle-tier technology that China requires to raise productivity levels to the point where living standards approximate those observed on the fringes of the world-system core, is also supported by the design of the export controls that have been employed to date.

The idea that the domestic innovation engine will show some initial promise but will ultimately underwhelm is also plausible. Speculatively, the system might underwhelm due to some combination of the following: (1) The nation's vast science and engineering corps may never be able to make the transition from the quantity of published research and patent generation to both genuine, Nobel-type quality *and* quantity, as the USA did over the course of the twentieth century (Mowery and Rosenberg 1999). (2) The depth and breadth of academic fraud within the Chinese research ecosystem may be even greater than thought (Normile 2017), which would mean that the current statistics on peer-reviewed publications would considerably overstate the true capability of the system. (3) Broad quality-of-life questions may inhibit China's ability to attract quality foreign scientific talent, as well as its ability to attract its own students home again after they graduate from foreign universities.[11] (4) Research and development outlays could continue to remain focussed on the quick wins of experimental projects, rather than frontier-defining basic research (Song and Zhou 2022: 6). (5) The CCP's desire to treat technology as a "commanding height" subject to invasive state oversight (albeit this comes with a major funding advantage) may stymie efforts to unlock the latent creativity of the nation (See Hofman 2023 and the discussion at the end of the previous chapter). (6) Lack of access to the world's most advanced semiconductors may stunt China's ability to independently develop the supercomputers (and next-generation quantum computing capabilities) required to take full advantage of the big data endowment that comes with the size of China's population, the prevalence of e-commerce, and the surveillance state itself (Lee 2018).

In summary then, the plausibility of this narrative world is supported by conventional forecasts, actions already observed within the ongoing rivalry with the USA, and by a series of hypothetical suppositions specifically related to China's human capital pool and the research ecosystem at large.

[10] There is a conspiracy theory cited in Shirk (2023: 10) that the USA has actively suppressed credible "number twos" when they reach 60% of US GDP in size, citing the examples of the Cold War and Japan in the 1980s.

[11] I first wrote about quality-of-life considerations in the Chinese context as part of a series of studies of first-tier international financial centres (McKay 2014a, 2014b). If you seek to attract the best talent in the world, you must be a place where the cosmopolitan classes wish to live. High salaries and generous study funding are not everything.

10.3 The Pathways

The next step is to combine these narrative worlds into pathways that reach out to 2100. The straightforward element of this step is to seed three pathways by deploying ***Song*** (Pathway A), ***Schism*** (B), and ***Shadow*** (C) as the respective opening phases, covering the 2021–2060 period (Table 10.2). Less straightforward is the decision as to how to combine these building blocks after the assumed strategic kink in 2060, whether to create additional combinations beyond the initial three, and how to define target variables for GDP per capita in the second phase given the wide range of jumping off points circa 2061. Table 10.2 details the sequencing decisions for pathways A–C, with a fourth pathway (D—transitioning from ***Shadow*** to ***Schism***) also described. The quadrant of the *Strategy Grid* that they pass through in each phase is also included in the table. There are three summary metrics for each pathway that speak directly to China's place in the world-system today and at the endpoint of the two phases (2060 and 2100). They are GDP per capita relative to the frontier; China's share of world exports of goods and services; and China's share of world GDP.

The target levels of GDP per capita relative to the frontier are described in the text and occupy the fourth column from the left. Note that appropriate adjustments have been made to convergence factors in the second phase, reflecting the variety of starting points for GDP per capita at the time of the 2060 kinks. Most pertinently, the imposition of ***Schism*** in the second phase of A and D requires a move into the third quadrant. Specifically, the simulation of ***Schism*** in the second phases of A and D is modelled on the strategic decline of the Japanese economy from 1991 to 2018, when it moved inwards from the living standards frontier at an annual rate of −0.7 percentage points. This rate of decline is extrapolated for the first 30 years of the second phase of these pathways, before stabilising in the 2090s.

The simulations show that Chinese GDP per capita relative to the frontier, which was 28% as of 2021, by 2060 could land between 37% (B ***Schism***) and 85% (A ***Song***), and between 27% (D ***Shadow-Schism***) and 85% (C ***Shadow-Song***) in

Table 10.2 The pathways

	Phase, building block and strategy grid quadrant		Position relative to frontier		World export share		World GDP share	
Path	2021–2060	2061–2100	2060	2100	2060	2100	2060	2100
A	*Song,* 1st	*Schism,* 3rd	85%	57%	21%	7%	30%	10%
B	*Schism,* 4th	*Shadow,* border of 1st & 4th	37%	55%	6%	6%	14%	10%
C	*Shadow,* 4th	*Song,* 1st	55%	85%	11%	17%	19%	14%
D	*Shadow,* 4th	*Schism,* 3rd	55%	27%	11%	2%	19%	5%
Memo: 2021 starting point			28%		13%		19%	

Source: Forward looking information is the author's own calculations, as described in the text. 2021 actual data sourced from *World Development Indicators*

2100. China's share of world exports, which was 13% as of 2021, by 2060 could land between 6% (B ***Schism***) and 21% (A ***Song***), and between 2% (D ***Shadow-Schism***) and 17% (C ***Shadow-Song***) in 2100. China's share of world GDP, which was 19% as of 2021, could land between 14% (B ***Schism***) and 30% (A ***Song***) in 2060, and between 5% (D ***Shadow-Schism***) and 14% (C ***Shadow-Song***) in 2100.

Among this collection of striking results, the last pair of outcomes are perhaps the most definitive with respect to China's long-run place in the world-system. They collectively argue that there is no pathway within this divergent suite that positions the Chinese economy to increase its share of global economic activity from today's level in 2100. Indeed, the optimistic end of the 2100 range is a 5-percentage point decline in relative share versus 2021. The portents for China's export share feature greater upside than GDP alone at the high end of the range, but also greater downside at the low end. Can China establish a *durable* position of global primacy in the second half of the century as its relative scale dwindles? That is most unlikely.

This relative decline occurs despite the fact that in 2100 Chinese living standards are closer to the frontier than today in three of the four pathways (D ***Shadow-Schism*** being the outlier), and in one pathway it manages to increase its share of world exports (C ***Shadow-Song***) from their already high level. These results render the discussion above on the plausibility of ***Song*** moot when the focal point is 2100 (but not necessarily for 2060, as will be discussed further below). What explains this apparent disconnect between success in living standards and dramatically diminishing relative scale? Demography.

10.4 An Aside on Population and Its Influence on Absolute and Relative Scale

The fact that China has a rapidly ageing population is well documented. Less well understood is the depth of demographic decline that China is facing in the second half of the twenty-first century. The latest estimates of the United Nations (2022) show that China's absolute population is peaking in the early 2020s, almost a decade earlier than previously expected. Furthermore, the long-run projections envisage a dramatic decline in China's absolute population in the second half of this century, with the loss of a staggering 658 million inhabitants between 2020 and 2100 (ibid, and Table 10.3). The United Nations' central tendency projection under "medium fertility" conditions has the birth rate declining further from its currently very low level, which is an explicit rejection of the likely effectiveness of the ending of the one-child policy. The death rate is also expected to climb as the population ages, and net migration is expected to be a trivial component of overall flows (ibid).

These assumptions take the total Chinese population back to levels last seen around the time of the Cultural Revolution. China's share of the global population is projected to fall below 10% in the 2070s: a share that is without precedent for China in the Common Era. It was less than one-third of its share at the time of the founding

Table 10.3 World population by region 1950–2100: levels

millions	World	USA	**China**	India	Indonesia	Japan	Other Asia	Eastern Europe	Other Europe	Africa	Other
1950	2499	148	**544**	357	70	84	324	220	330	228	195
1960	3019	176	**654**	446	88	94	417	254	352	284	254
1970	3695	200	**823**	558	115	105	545	276	381	365	328
1980	4444	223	**982**	697	148	118	691	295	399	482	410
1990	5316	248	**1154**	870	182	124	881	310	411	638	497
2000	6149	282	**1264**	1060	214	127	1071	305	422	819	585
2010	6986	311	**1348**	1241	244	128	1260	295	442	1055	662
2020	7841	336	**1425**	1396	272	125	1446	293	453	1361	734
2030	8546	352	**1416**	1515	292	119	1618	282	455	1711	788
2040	9188	367	**1378**	1612	308	111	1768	271	452	2093	830
2050	9709	375	**1313**	1670	317	104	1889	260	443	2485	853
2060	10,068	381	**1205**	1695	319	97	1974	246	430	2861	860
2070	10,297	387	**1085**	1690	318	89	2022	232	416	3206	852
2080	10,415	391	**973**	1655	313	83	2039	220	404	3504	832
2090	10,424	393	**863**	1598	306	78	2033	211	393	3746	803
2100	10,349	394	**767**	1530	297	74	2007	203	384	3924	770

Source: Author calculations using data from United Nations (2022)

of the People's Republic (Table 10.4), and less than one-quarter of its share during the late Ming (Fig. 10.1).

China's major rivals for primacy in terms of raw economic scale at the end of the twenty-first century—the USA and India (McKay 2012)—will see their relative population ratios versus China shift dramatically. India's population was projected to surpass China's in 2023, and to be roughly double China's in 2100: or from 1:1 to roughly 2:1 (Table 10.3). The USA's population is roughly one-quarter of China's today: that will rise to one-half in 2100.

It should be noted that while demographic projections are considerably more reliable than economic ones, beyond a forward generation or two there is still considerable uncertainty. The United Nations reports that 95% confidence intervals for China's total population in 2100 range from just above 1 billion at the high end to a little over 500 million at the low end, while a +/− 0.5 birth rate sensitivity widens the range beyond the 95% confidence interval. The endogenous nature of population preferences within a strategic mix is an additional complication in projections covering such as long time period, as discussed in general terms in Chap. 2. It is also notable that critiques of the United Nations projections by independent demographers have tended to highlight that they are not aggressive enough with declining fertility assumptions in the developing world, and therefore they may be somewhat late in their timing of peak global population (Bricker and Ibbitson 2020 and references cited therein). China's unique history with population control makes them a special case within the developing world of course, but the general view of the directional risk to the United Nations' work remains instructive. The judgement then is that demographic projections in the second half of the century should be taken as rough, and not exact, and that if the risk around the central tendency is skewed in a statistically significant way in any direction, the skew is probably towards lower fertility and thus total population globally.

The caveats with respect to the likely accuracy of demographic projections having been registered, the fact remain that the general signal with respect to Chinese demography is one of rapid and large-scale decline. Demographic headwinds of such intensity will severely limit China's ability to expand its economy at or above the average global percentage rate in the second half of the century[12] and prevent significant cumulative erosion in its relative economic scale.

Looking specifically at working age rather than the total population, China's 15-to-64-year age cohort is expected to decline at a compound annual rate of −1.1% out to 2060, and−1.4% from 2061 to 2100. The latter figure is easily the fastest rate of contraction of any major economy or region in that time period, with Japan's−

[12]Percentage rates are specified here, as is the convention, but scale increments can be very different. A simple arithmetic example based on the Chinese circumstance makes this point: at one stage in the 2000s, China was a $7 trillion economy growing at 11%. In the 2010s, it was an $11 trillion economy growing at 7%. In both instances, it was producing incremental income of $77 billion annually. To match a $77 billion increment, as a $20 trillion economy, the USA would need to grow at 3.85%. It did not: but the scale gap between the two nations in terms of incremental income was not as wide as a 7% versus 2% GDP growth rate would imply.

Table 10.4 World population by region 1950–2100: shares

% shares	World	USA	**China**	India	Indonesia	Japan	Other Asia	Eastern Europe	Other Europe	Africa	Other
1950	100	6	**22**	14	3	3	13	9	13	9	8
1960	100	6	**22**	15	3	3	14	8	12	9	8
1970	100	5	**22**	15	3	3	15	7	10	10	9
1980	100	5	**22**	16	3	3	16	7	9	11	9
1990	100	5	**22**	16	3	2	17	6	8	12	9
2000	100	5	**21**	17	3	2	17	5	7	13	10
2010	100	4	**19**	18	3	2	18	4	6	15	9
2020	100	4	**18**	18	3	2	18	4	6	17	9
2030	100	4	**17**	18	3	1	19	3	5	20	9
2040	100	4	**15**	18	3	1	19	3	5	23	9
2050	100	4	**14**	17	3	1	19	3	5	26	9
2060	100	4	**12**	17	3	1	20	2	4	28	9
2070	100	4	**11**	16	3	1	20	2	4	31	8
2080	100	4	**9**	16	3	1	20	2	4	34	8
2090	100	4	**8**	15	3	1	20	2	4	36	8
2100	100	4	**7**	15	3	1	19	2	4	38	7

Source: Author calculations using data from United Nations (2022)

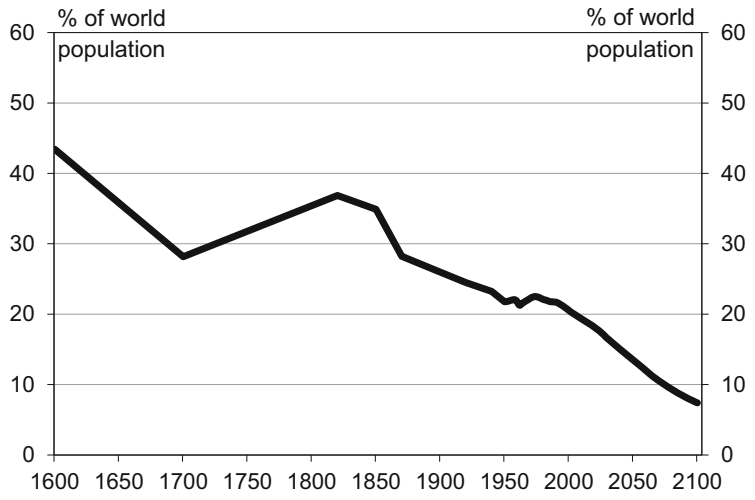

Fig. 10.1 China's declining share of world population from 1600 to 2100. Source: Maddison from 1600 to 1950. 1950 onwards from the United Nations (2022)

0.7% rate coming in second (author calculations from data in United Nations 2022). Arithmetically, for the last four decades of the twenty-first century, Chinese output per worker must increase by 1.4% per year *just to prevent production from shrinking*. To put 1.4% into context, that is what US output per worker averaged across the 2010s.[13] Whether the true figure ends up being 1.4% or, optimistically say, 2.0%, China's ability to sustain whatever status in the world-system it has achieved in the first half of the twenty-first century due to its scale will be seriously challenged in the second half. China's demography is a serious handicap in the race for primacy.

The scale of this unprecedented demographic contraction is arguably the critical factor that will determine China's place in the world-system in 2100. Indeed, it is a key factor for the world-system itself, not just for China's place within it.

10.5 The Suite of Pathways and the Strategy Grid

Table 10.1 indicates which quadrants of the *Strategy Grid* the Chinese economy passes through in each phase of the four pathways. The scatter plots themselves (Figs. 10.2, 10.3, 10.4 and 10.5) are shown overleaf. Each is on the same axis scale for ease of visual comparison, with 70 years of history and 80 years of projected outcomes.

[13] Author calculation of average output per worker in the non-farm business sector for all employed persons, accessed from the Federal Reserve Bank of St Louis "FRED" database on 13 December 2022. https://fred.stlouisfed.org/series/PRS85006092

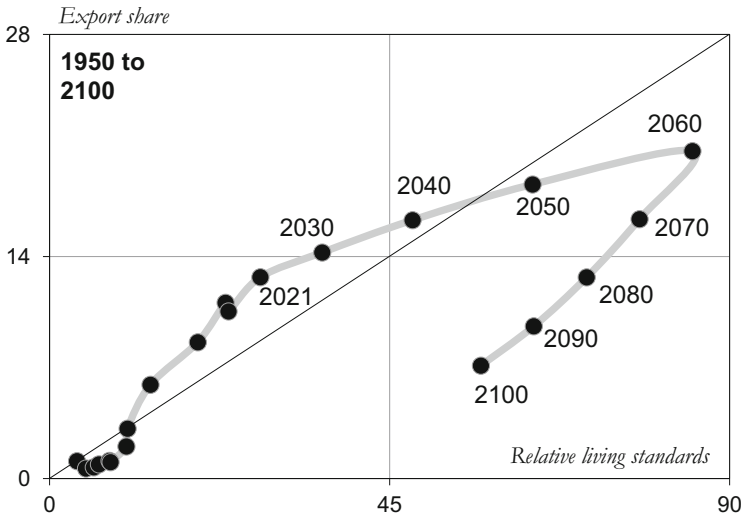

Fig. 10.2 Pathway A: Song-Schism, 1950–2100

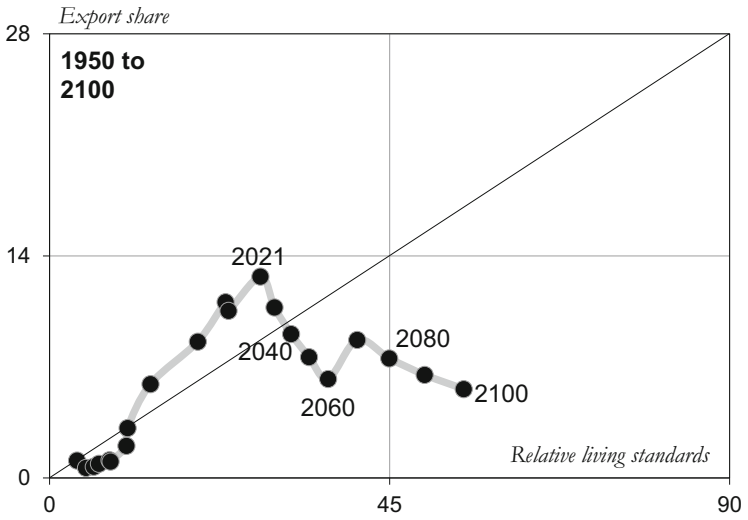

Fig. 10.3 Pathway B: Schism-Shadow, 1950–2100

Pathway A (***Song-Schism***, Fig. 10.2) passes through the desirable first quadrant in the first phase up to 2060, but the kink towards an anti-strategic mix produces a third quadrant outcome in the second phase. Pathway B (***Schism-Shadow***, Fig. 10.3) produces consecutive fourth quadrant outcomes across the two phases. Pathways C and D (***Shadow-Song*** and ***Shadow-Schism***, Figs. 10.4 and 10.5) both follow ***Shadow's*** fourth quadrant outcome in phase one, before branching off into a first

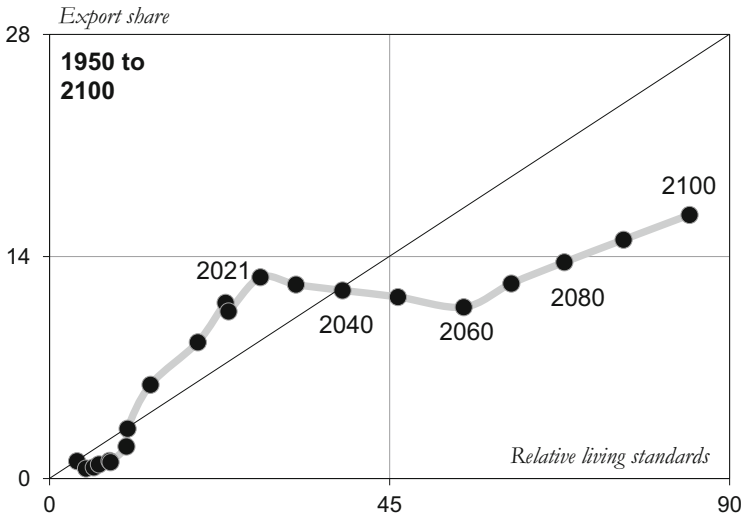

Fig. 10.4 Pathway C: Shadow-Song, 1950–2100

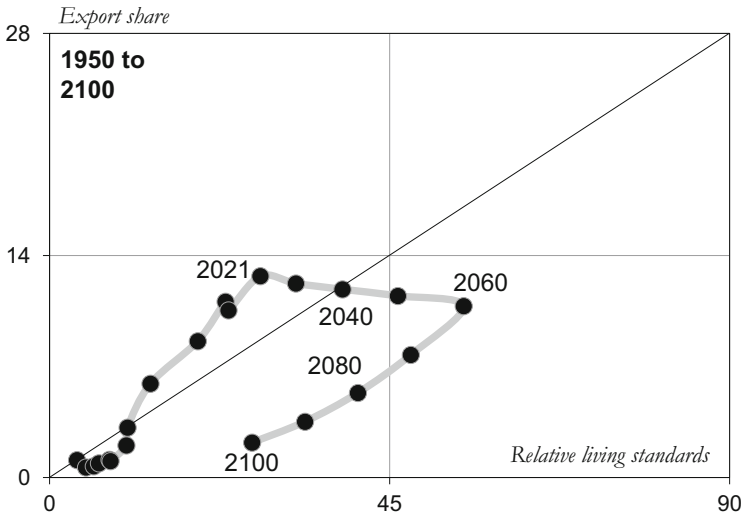

Fig. 10.5 Pathway D: Shadow-Schism, 1950–2100

quadrant kink under ***Song*** and a third quadrant kink under ***Schism***. The second quadrant (an export-dependent kink that produces regression on relative living standards) is not represented, which seems a reasonable exclusion given hardening attitudes towards Chinese trade practices across the Western world.

Reviewing the pathways again within the context of the *Strategy Grid* reinvigorates the question of hegemony under the ***Song*** hypothetical. While

Table 10.5 The Hegemon's share? Song hypothetical versus USA reality

% World exports	1961	1970	1980	1990	2000	2010	2021
USA 1961–2021	11	11	10	9	10	7	6
	2021	**2030**	**2040**	**2050**	**2060**		
Song 2021–2060	13	14	16	19	21		
% World GDP	**1961**	**1970**	**1980**	**1990**	**2000**	**2010**	**2021**
USA 1961–2021	39	36	25	26	30	23	24
	2021	**2030**	**2040**	**2050**	**2060**		
Song 2021–2060	19	21	24	27	30		

Source: Author estimates and calculations

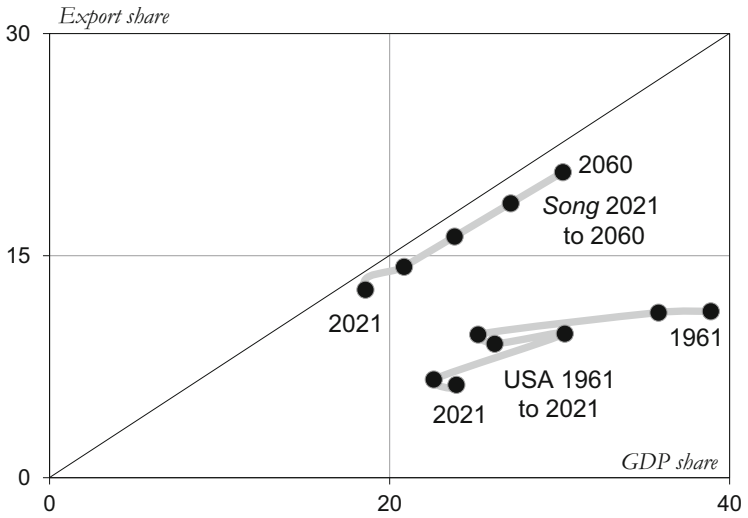

Fig. 10.6 Hegemonic scale within the Strategy Grid. Source: Author estimates and calculations

demography makes it extremely unlikely that China will be as influential an actor in the world-system at century's end than at its national apex, that apex could still be absolutely extraordinary. So, putting the question again, could China temporarily achieve a position in the world-system that prima facie might be viewed as a co-requisite for hegemony? The answer is yes—temporarily. Consider Table 10.5 and Fig. 10.6, which feature the ***Song*** pathway in a scale-focussed presentation in direct comparison with the historical experience of the USA: a nation that has sustained global primacy for well over half a century.

Superficially, Table 10.5 and Fig. 10.6 argue that if China does experience a pathway something like the ***Song*** hypothetical, between 2040 and 2060 its share of world GDP will be similar to that of the USA from 1980 to 2000, but with an even more pronounced role as an exporter in the world trading system. Once again, superficially, a snapshot of China in 2060 and the USA during its unipolar moment at the turn of the twenty-first century puts both their economies at roughly 30% of

global output, but China would be twice as important in terms of world exports (21%–10%). The wedge between the export shares of the two economies relies both on China's elevated starting point for exports, and the long-run impact of assuming a balanced, first quadrant strategy under ***Song***. This hypothetical strategic choice contrasts with the USA's actual pathway, which transited back and forth on the borderline of the first and fourth quadrants of the *Strategy Grid* in the last 40 years of the twentieth century.

The data and narrative above emphasise that China presents a formidable planning challenge for the strategic leadership of the world's nations and alliances. While it is a consistent insight across the pathways discussed above that China will have faded in relative scale by 2100, ***Song*** argues it is plausible that China could still achieve hegemonic scale by the middle of the century. It may also fade significantly earlier—as an anti-strategic tilt is plausible, as formalised in ***Schism.*** The uncertainty is arguably greatest for small and medium-sized nations that are on the periphery of the world-system but are close to China's orbit today. How do such nations execute successful strategies that explicitly hedge future plausible directions for the world-system and China's place within it? What does an effective strategic hedge that can be executed independently and works as intended under both ***Song*** and ***Schism*** entail? One suspects that it is yet to be defined.

In contrast to the strategic complexity facing the periphery, while the ***Song*** hypothetical remains plausible, the incumbent hegemon and the remainder of the world-system core can focus their attention on that outcome to the exclusion of others and await the shift in probabilities over time—recognising that their own actions are endogenous to the outcome. A fundamental decision here is how the incumbent members of the core perceive the competitive spur that prospective Chinese entry entails. Do incumbents see the challenge as a race to be run and won while staying within their respective lanes? Or a wrestling match where victory is zero-sum and both sides must embrace a policy of grappling at close quarters?[14] Or will a defensive siege mentality take hold, with the incumbent members of the core retreating behind a hypothetical rampart having raised the drawbridge and lowered the portcullis on new entrants?

And what of the relatively conventional pathway described in ***Shadow***? As a phase one narrative, ***Shadow*** is a strategically benign hypothetical. China does not ascend to hegemonic heights at its zenith under ***Shadow***, but nor does it fade badly. However, as a gateway to ***Song*** post 2060 (pathway C), it offers a vision of a wealthy and accomplished China that retains double-digit percentage shares of world GDP and world exports as the twenty-second century dawns. This China may be as formidable in the world-system in 2100 as the behemoth of 2060 hypothesised in pathway A. It would have emerged from its protracted demographic contraction as a highly productive, technologically adept, and self-sufficient entity—and a new democrat—that could look forward to the twenty-second century with confidence.

But that is another story—and for future generations to tell.

[14] I am indebted to Professor Anthea Roberts from the ANU's REGNET division, for this insightful analogy.

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Appendix: The Laws of History

The *Primary Laws* are derived from the underlying mechanisms.

The *Secondary Laws* are derived from the general model.

The *Tertiary Laws* of institutional change are derived from the primary and secondary laws.

The following relies solely on Snooks (1998a).

Primary Laws

The law of human motivation: The constant occupation of mankind has been the struggle to survive and prosper under conditions of scarcity. It is the auto-catalysing and self-sustaining driving force.

The law of competitive intensity: Human action—involving the selection and pursuit of dynamic strategies—varies according to the intensity of competition for scarce resources at any given level of technology.

The law of strategic optimisation: A competitive society will adopt the dynamic strategy that achieves its materialist objectives most efficiently. This will depend upon relative factor prices.

The law of strategic imitation: Successful strategic innovators (pioneers) will be followed by a swarm of imitators. The pioneers are the first to perceive and act upon a change in relative factor prices. Their conspicuous success encourages others to swarm, disseminating the strategy across society. This works from the individual, group, corporate, regional and national levels.

The law of strategic struggle: Individuals will contest control of the dynamic strategy that influences the distribution of wealth. The struggle is between order (incumbents) and chaos (outsiders). The forces of order offer ideologies of compliance and are often rent-seeking elites. Chaos provides the ideology of dissent and

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seeks to disturb the status quo and gain control of strategic direction. This struggle is vital for institutional change.

The law of diminishing strategic returns: Investment in a dynamic strategy will eventually lead to diminishing returns and marginal costs and revenue will equate, signalling exhaustion.

The law of strategic crisis: The exhaustion of a dynamic strategy leads to crisis not stasis. A "strategic revenue gap" opens up where the costs of a strategy exceed the revenues it creates—and the savings-investment complex underlying the system enters distress.

The law of strategic collapse: The exhaustion of a dynamic strategy will lead to societal collapse if it is not replaced by a viable alternative.

Secondary Laws of Historical Change

The law of cumulative technological change: The relationship between a series of technological shifts is geometric owing to the accelerator effect when the output of one paradigm becomes the input of the next. This is the Snooks-Panov vertical.

The law of technological revolution: Once the potential for further increases in global prosperity is exhausted, a new technological paradigm will emerge encompassing greater potential access to resources and greater potential living standards.

The law that the optimum size of a society depends upon the umbrella paradigm: Under the industrial paradigm the optimum size is defined by the leading societies. Under the conquest or commerce societies the optimum can be exceeded through zero sum strategies that lift one society at the expense of others without a lift in global potential. That is why conquest and commerce societies suffer crises and often collapse when they reach the point of strategic exhaustion.

The law of human dispersion: Where natural resources remain under-utilised, in open societies they will be progressively brought into the material pursuit through migration and population increase.

The law of eternal recurrence: Where natural resources remain under-utilised, in open societies operating under the Neolithic paradigm, they will produce a circular strategic pathway utilising either the conquest or commerce strategies.

The law of economic progress: Where natural resources remain under-utilised, in open societies operating under the industrial paradigm, they will produce linear progress within a wave-like pathway.

The law of dynamic regression: If elites resist the demand for growth-inducing technological change at the point of transition between two umbrella paradigms, the result will be regression to the conquest strategy.

Tertiary Laws of Institutional Change

The fundamental law of institutional change: All institutions and organisations change in response to the unfolding and changing of the dynamic strategy and its sub-strategies. The implication of this law is that if the strategic sequence is reversed then institutions will do likewise. A sequence of conquest–commerce–conquest will result in a reversion to the institutional framework that supported conquest.

The law of democratisation: Societies will become increasingly democratic as the technological strategy unfolds. They will become less so as the technological strategy retreats or is rejected.

The law of social complexity: As a strategy unfolds and becomes more complex so too will the social vehicle that supports it, and vice versa.

The law of social cohesion: A society will only cohere and remain viable while it has a viable strategy unfolding. Strategic exhaustion will render the social vehicle redundant.

The law of social unrest: Instability will arise while a viable strategy is not present or elites are providing ineffective or obstructive leadership for an otherwise viable strategy.

The law of institutional economy: Institution forms that are chosen to support dynamic strategies are those which will do so most efficiently.

The law of anti-strategic political collapse: Any society that is both subject to competition and is led by a group of anti-strategists, who exploit non-strategists and oppress strategists, will eventually collapse. Such systems are incapable of internal reform, as rent-seeking constantly re-asserts itself.

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Index

A
Academic fraud, 291
Ageing, 268, 293
Agency premia, 29, 36
Agricultural fine-tuning, 165
Agriculture, 19, 22, 97, 98, 126, 127, 130, 161, 162, 168, 175, 177, 184, 189, 196
Alsace-Lorraine, 59
Animal power, 19, 22, 176
Animal spirits, 31, 215
Anti-dumping, 249–251
Anti-Rightists campaign, 176, 192
Anti-strategic framework, 27
Anti-strategic left, 173
Anti-strategic policy, 12, 27, 176, 181, 282
Anti-strategic societies, 26, 27, 174, 284
Anti-strategists, 27, 193, 307
Apple, corporation, 54
Arbitrage, 76, 186, 191
Artificial intelligence, 263, 274
ASEAN, 203, 207, 208, 228, 233
Asian financial crisis, 200, 264
Asset prices, 28, 29, 33, 35, 37, 102, 104–106, 108, 109, 111, 272, 273
Australia, 77, 230
Autarky, 30, 76, 122, 174, 177, 179, 184, 284
Autogenic theoretical process, 31

B
Backwardness, 11, 119, 134, 146, 156, 162, 194, 285
Balance of payments, 135, 138, 139
Balance of power, 8, 65, 82
Balance sheets, 26, 102, 105, 107, 203, 205, 251, 273
Banks (and banking), 26, 89, 105, 109, 110, 187, 189, 191, 198–200, 215, 237, 238, 241, 242
Barbarian(s), 78, 125–127, 129, 132, 134, 143, 145, 146
Basic research, 29, 274, 291
Belle Époque, 144
Big data, 291
Bismarck, 30
Bolsheviks, 149
Britain, 6, 23, 30, 82, 120, 136–138, 141–143, 164
Bureaucratic elite, 152
Business cycles, 17, 19, 87

C
Capital deepening, 130, 169
Capital formation, 11, 67, 68, 91, 96, 166, 167, 169, 171–173, 188, 217, 219, 235
Capital stock, 32, 87–89, 108, 109, 150, 168–170, 173, 176, 177, 246
Carbon price, 55
Carthage, 23
Carve up of China, 143, 144
Catch-up economies, 44
See also Latecomers
CCP Central Committee, 184, 198, 259
CCP Constitution, 259
Celestial Empire, 141, 142, 152, 157
Central Military Commission (China), 179, 259
Century of humiliation, 11, 119

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H. McKay, *The Strategic Logic of China's Economy*, Contributions to Economics,
https://doi.org/10.1007/978-3-031-47229-9

Chen Yun, 190, 191, 194, 197
Chiang Kai-shek, 149
China's strategic pathway, 183–221, 226, 247, 266
Chinese Communist Party (CCP), 12, 149–151, 155, 168, 171, 173, 175, 176, 178–180, 184, 189–194, 198, 199, 215, 227, 236, 253, 259–261, 264–266, 268, 269, 275, 284–287, 291
Chinese Dream, 260
Chinese renminbi/yuan, *see* Renminbi, Chinese (RMB)
Civil service examinations, 145–148
Collateral, 28, 29, 34, 36, 91, 105, 108, 273
Collectives, 28, 123, 128, 132, 175–177, 185, 198, 284, 287
Colonisation, 20, 21, 121, 122, 124, 126, 127, 129, 130, 132, 152
Command planning, 30, 122, 186, 286
Commerce, 19, 21–24, 76, 85, 86, 121, 122, 129, 132, 134, 135, 140, 160, 187, 306, 307
Common prosperity, 261, 273, 275
Communism, 176
Comparative advantage, 20, 41–43, 51, 68, 69, 77, 156, 171, 173, 175, 178, 181, 184, 205–209, 247, 262, 267
Competition, 3, 12, 22, 26, 27, 77, 89, 97, 98, 123–127, 129, 130, 132, 133, 136, 137, 145, 155, 174, 180, 191, 194, 196, 242, 244, 263, 269, 274, 282, 286, 287, 305, 307
Confidence multiplier, 31
Confucian, 132, 141, 144, 145
Congress of Vienna, 61
Conquest, 11, 19, 21–24, 61, 74, 81, 88, 111, 119, 121, 122, 124, 126, 127, 129–132, 282, 306, 307
Conquest empires, 23, 130, 151
Consensus, 9, 11, 85, 162, 165, 168, 191, 194, 195, 240, 287
Construction, 32, 97, 98, 146, 155, 162, 165, 166, 172, 179, 181, 187, 188, 212, 216, 217, 219, 261, 286
Continuous revolution, 171, 174, 178
Core–periphery relationships, 160
Corruption, 136, 189, 226, 262, 265, 275
Creative destruction, 19
Credit, 28, 36, 37, 85, 104, 106, 136, 187, 189, 191, 194, 196, 197, 200, 202, 215, 241
Cultural Revolution, 178, 179, 192, 293
Current account, 78, 96, 108, 216, 218–220, 226, 235, 251, 271

D
Data availability, 64, 75, 83, 156, 167, 189
Debt, 29, 36, 96, 101, 102, 105, 108, 109, 111, 148, 198, 215, 219, 246, 262, 264, 273
Decentralisation, 176, 178
Decision-making loop, 36
Democratisation, 24, 307
Demographic projections, 295
Deng Xiaoping, 11, 12, 123, 178, 179, 181, 183–221, 260, 262, 268, 276
Developmental states, 8, 97
Division of labour, 22, 77, 178, 284
Domestic demand, 12, 79, 89, 96, 100, 108, 111, 183, 194, 197, 215, 243, 247, 266
Dual Circulation, 12, 261, 266, 267, 273, 284
Dual-track reform, 189
Dutch Republic, 30
Dynamic strategies, 19–21, 24, 25, 87, 121, 123, 126, 127, 129–133, 161, 305–307
Dynamic strategy theory (DST), 4–8, 10–12, 17–37, 73, 74, 81, 87, 110, 112, 119, 121, 122, 124, 127, 132, 145, 147, 151, 155, 156, 161, 165, 171, 183, 185, 235, 253, 281, 285, 288
Dynamic substitution, 7, 12, 43, 68, 69, 78, 80, 95, 183, 202, 205–213, 221, 227, 240, 247–249, 252, 254, 267
Dynastic taxonomy, 11, 119, 121

E
Economic coercion, 264, 284
Economic Complexity, 7, 262
Economic development, 9, 44, 60, 89, 126, 174, 180, 201, 240, 261, 265
Economic nationalism, 67, 267
Education, 24, 79, 145–148, 176, 199, 235, 243, 244, 274, 275
Egypt, 23
Enclave industrialisation, 11, 155, 169, 171
Entrepot economies, 203
Entrepot sub-strategy, 54
Entrepreneur, 32, 186, 219, 227
Espionage activities, 265
Eternal recurrence, 20, 130
Europe, 10, 21, 23, 24, 73, 77, 79, 82, 120, 123, 125, 129, 132–134, 152, 156, 196, 230, 252, 294, 296
Exchange rate(s), 28, 76, 86, 93, 98, 101–103, 107, 108, 111, 139, 187, 197, 198, 200, 209, 215, 238, 249–252, 262
Exhaustion, 10, 19, 27–30, 84, 87, 101, 104, 109, 129, 158, 160, 161, 225, 306

Export controls, 290, 291
Export-dependent strategies, 250
Export orientation, 203, 208, 227, 232, 233, 235, 254
Export share, 6, 74, 75, 78, 83, 84, 89, 92–94, 98, 99, 101, 104, 107, 109, 158, 160, 170, 179, 180, 187, 202, 203, 209, 214, 233, 249–252, 266, 271, 288, 292, 293, 301
Extra-territoriality, 77, 81, 140–142, 144

F
Factor inputs, 98, 127, 179, 185, 235
Factor market distortions, 237, 247–252
Family multiplication, 20, 21, 121, 122, 124, 126, 127, 129, 132, 133, 145, 148, 151, 152, 165
Fascism, 24
Feedback loops, 25, 28, 108, 111
Fertiliser, 126, 130, 185
Financial accelerator, 31, 36
Financial system, 43, 79, 187, 236
Finland, 47
Fiscal policy, 196, 200, 244–246, 262
Fiscal reform, 196, 244
Five Year Plan(s) (5YP), 12, 63, 173, 174, 177, 179, 260, 262, 265, 266, 273–276
Fixed assets, 26, 32, 33, 185, 198
Flying geese model, 44, 80, 81
See also Wild geese
Food security, 161
Forecasting, 290
Foreign direct investment (FDI), 89, 108, 164, 187, 198, 208, 248, 249, 251
Foreign exchange reserves, 205
Foreign-funded firms, 212, 213, 249
Fossil fuels, 94
France, 6, 76, 142, 143, 229, 230
Franco-Prussian War, 59
Frontier economy, 6, 10, 12, 44, 46, 47, 65, 67, 73, 86, 100, 156, 159, 206, 290
Funnels of transformation, 22

G
Gang of Four, 179
Garnaut, R., 8, 10, 47, 86, 184, 189, 192, 193, 196, 200, 206–208, 226
German strategy, 61
Germany, 6, 82, 143, 229, 230, 250
Gerschenkron, A., 42, 63, 285
Gini coefficients, 233, 234, 265
Global Competitiveness Index, 264, 290
Global financial crisis, 26, 31
Global governance, 260, 275
Global Innovation Index, 262
Global North, 260
Global Strategic Transition (GST), 19, 22, 25–27, 37, 74, 87–89, 98, 111, 143–148, 159, 165, 166, 174, 179, 183, 184, 189, 193, 202, 205, 221, 226, 228, 233, 240
Gold standard, 80, 85
Gradualism, 27, 176, 184, 270
Grain procurement, 175
Great Depression, 67, 85, 86
The Great Dispersion, 22
Great Earthquake, 85
Great Famine, 176
Great Leap Forward, 176, 178, 192
Great Powers, 3, 4, 10, 11, 184, 225, 286
Guerrilla tactics, 150

H
Handicraft production, 77, 162, 169
Handicrafts, 162, 165, 166, 168, 171, 186
Heavy industry, 167, 177, 187, 263
Hegemonic, 3, 4, 261, 275, 284, 288, 300, 301
High growth eras, 10, 42
High tide of socialism, 175
Hong Kong, 137, 140, 141, 143, 164, 203, 205, 207, 229, 230, 247, 248
Household responsibility system, 184, 185
Hu, Jintao, 215, 262
Huawei, corporation, 267
Human capital, 126, 178, 232, 263, 291
"Hundred Flowers" movement, 176
Hunter-gather technology, 22
Hyperinflation, 151

I
Ideology, 12, 24, 174, 178, 181, 192, 269, 270, 305
Import substitution, 42, 43, 68, 69, 207, 271
Incentives, 22, 27, 85, 108, 123–125, 129, 165, 176–179, 184, 185, 191, 196, 199, 235, 274
Incoherent policy, 12, 26, 174, 181
Incremental capital to output ratio (ICOR), 216, 218, 219

Indemnities (war), 77, 79, 135, 141–143, 148
India, 76, 135–137, 156, 203–205, 210, 211, 228, 247, 288, 294–296
Indigenous innovation, 95, 248, 249, 251, 262, 273, 274, 286, 288
Individual desire, 23, 29
Indochina, 142
Indonesia, 203, 204, 228, 247, 294, 296
Industrial clusters, 43
Industrial paradigm, 6, 8, 28, 41–44, 53, 64, 111, 145, 260, 262, 282, 306
Industrial policy, 61, 261, 268, 274, 284, 286
Industrial production, 44, 63, 86, 94, 164, 165, 167, 168, 171, 230–232
Industrial Revolution, 6, 11, 20, 23, 33, 41, 64, 65, 119, 125, 133, 134, 152
Industrial robots, 263
Industrial strategy, 162, 170
Industrialisation, 4, 6, 8, 10–12, 41–69, 73–75, 79–86, 88–90, 93, 100, 110–112, 121, 122, 143, 145, 155, 161, 162, 164, 166–180, 187, 188, 206, 216–218, 221, 228–234, 242
Inequality, 102, 189, 227, 233, 252, 265, 273
Inflation, 26, 78, 88, 91, 102, 104, 106, 111, 138, 139, 174, 189, 191, 193, 196–198, 200, 215, 268
Inner Mongolia, 82, 86, 150
Innovation, 19, 25, 108, 123, 124, 126, 129, 152, 185, 235, 248, 273–276, 289, 291
Institutions, 9, 24, 25, 86, 89, 145, 146, 155, 165, 181, 187, 196, 199, 202, 205, 240, 282, 307
Intellectuals, 5, 89, 128, 143, 176, 178, 262, 263, 289
Interest rates, 32, 33, 91, 104, 191, 238, 262
International competitiveness, 42, 43, 50, 53–55, 57, 65, 67, 77, 80, 81, 85, 88, 91, 170, 192, 194, 198, 200, 202, 206, 208, 213, 235, 237, 245, 247–252, 267, 271, 284
International engagement, 12, 42, 45, 76, 133–144, 179, 183, 187, 189, 193, 202, 203, 213, 221, 249, 261
International goodwill, 264
International investment positions (IIPs), 203–205
International Monetary Fund (IMF), 8, 205, 219, 246, 264
International trade, 7, 43, 44, 61, 63, 66, 67, 69, 87, 89, 90, 102, 135, 162, 187, 205, 208, 209, 221, 227, 245
Inventories, 140, 172, 173, 187, 188, 198, 216, 217, 219
Investment accelerator, 31
Investment share, 96, 97, 102, 106, 166, 167, 169–171, 173, 216, 219, 232, 233, 246
Iron rice bowl, 199
Italian city-states, 23

J

Japan, 4, 6, 8–11, 24, 26, 30, 37, 73–112, 120, 128, 134, 142, 143, 148–150, 152, 155, 164, 165, 168, 202, 203, 205–208, 210, 211, 215, 216, 228–230, 233, 242, 248, 250, 273, 287, 288, 291, 294–296
Jiang Zemin, 194, 197, 213, 215

K

Kanagawa Treaty, 76
Keynes, J.M., 31
Khrushchev, N., 176
Kleptocracies, 23
Korotayev, A., 119, 120, 290
Kuznets, S., 42, 95, 159

L

Labour, 5, 18, 22, 24, 36, 87, 88, 91, 98, 140, 179, 185, 186, 206, 235, 237, 242, 244, 247, 251
Land, 20, 22, 24, 61, 67, 82, 92, 102, 103, 124, 127–129, 132, 134, 137, 139, 142, 150, 152, 175, 178, 235–237, 246, 264, 292
Land area, 23, 128, 129, 161, 231, 232, 245, 246
Land reform, 151
Latecomer economies, 44
Latin America, 252
Law of Competitive Intensity, 123, 127, 151, 305
Law of Eternal Recurrence, 121, 151, 306
Law of Human Dispersion, 121, 127, 151, 306
Laws of History, 5, 18, 27, 37, 305–307
League of Nations, 150, 159
Legitimacy, 135, 145, 151, 152, 192, 202
Lewis turning point, 208
Lin Biao, 178, 179
Living standards, 4, 5, 8–10, 12, 19, 23, 29, 42–44, 46–53, 56, 59, 60, 62, 65, 66, 69, 74, 75, 77, 83–87, 91–93, 98, 99, 101–103, 107, 109, 111, 130, 132,

156–161, 170, 181, 183, 189, 192, 200, 201, 213, 214, 227–230, 233, 236, 250, 254, 266, 273, 284–293, 299, 306
Logistics, 77, 128, 169, 178, 245, 247, 248, 251, 262, 286
Logistics Performance Index, 245, 248, 264, 290
Long March, the, 150
Long waves, 282
Longevity of China's empire, 130, 151
Low Countries, 6

M
Macroeconomic policy, 215, 254
Macroeconomic stability, 189, 238, 240–242
"Made in China 2025", 261
Malaysia, 203–205, 228, 230, 233, 247, 249
Manchukuo puppet state, 150
Manchuria, 82, 86, 142, 148, 150, 151, 167, 173
Manufacturing powerhouse, 65, 156, 274
Mao Zedong, 149, 11, 42, 150, 155–156, 171–181, 192–193
Maoist model, 12, 155, 178, 180
Market forces, 174
Marketisation, 186, 187, 215, 216, 262
Matsukata reforms, 78
Mega-market, 184, 261
Mega-state, 184
Meiji restoration, 10, 73, 76
Mesopotamia, 23
Middle-income trap, 10, 225, 252, 270, 271, 289
Migrants, 186, 206, 226, 236, 237, 242, 244
Militarism, 86, 87
Ming dynasty, 122, 126, 152
Minsky, 31, 34
Mixed economic system, 156
Modern economic growth, 19, 74, 120, 162, 166, 196, 229
Modern manufacturing, 164–166, 168–170
Monetary policy, 78, 99, 104, 106, 108, 109, 191, 196, 215
Mongol(s), 122, 125–128, 131–133, 152
Monopsony, 175, 177, 186
Multiplier, 31, 185

N
Napoleonic Wars, 60, 61, 65
National People's Congress, 176
National rejuvenation, 260
National security, 79, 177, 267, 268, 291
Natural resources, 18, 42, 45, 58, 121, 123, 130, 286, 306
Needham question, 11, 119, 127, 151
Neolithic, 19, 20, 22, 23, 33, 121, 124, 125, 127, 129, 130, 132, 133, 145, 152, 156, 286, 306
Neolithic fine-tuning, 152
Neolithic technology, 22, 23
Netherlands, 23, 76, 229, 230
New Development Philosophy, 261, 275
New Era, 3, 13, 259–276
Newly Industrailised Economies (NIEs), 206–208, 210, 211, 228, 247
New Zealand, 67
Nokia, corporation, 54
Norman England, 23

O
One-child policy, 208, 261, 293
Openness to trade, 24, 55
Opium trade, 139, 141
Opium War, 134, 142, 145
Orthodox economics, 31
Outward-oriented industrialisation, 7, 12, 43, 46, 90, 92, 97, 98, 122, 156, 183, 184, 189, 220, 221, 225, 248, 249, 251, 252

P
Palaeolithic, 19, 21, 22
Pearl Harbour, 150
Peasantry, 150, 151, 175
Pensions, 199, 236, 244
The People's Bank of China, 187
People's Liberation Army, 179
People's Republic of China, 10, 11, 13, 27, 119, 151, 155, 225, 259, 265
Periphery, 92, 127, 131, 160, 164, 301
Perkins, D., 47, 126, 127, 129, 130, 161, 162, 166, 171, 173, 174, 178, 179, 186, 187, 191, 193
Persia, 23
PhD graduates, 263
Philippines, 82, 204, 228, 247
Phoenicia, 23
Policymakers, 28, 29, 104, 111, 138, 201, 215, 236, 244, 274
Politburo, 259
Political influence activities, 265

Political regimes, 24
Population growth and dispersion, 19, 20, 22, 49, 121, 128
President Biden (United States), 267, 268, 291
President Trump (United States), 267, 268
Price signals, 12, 26, 92, 102, 105, 106, 108, 155, 174, 177, 181
Primacy, 261, 270, 284, 288, 293, 295, 297, 300
Prince Kung, 145–147
Pro-cyclical dynamics, 31, 87, 91, 102, 105, 110, 213
Productivity, 9, 23, 26, 83, 86, 87, 89, 91, 97, 98, 126, 129, 130, 174, 178, 185, 186, 206, 212, 218, 250, 270, 284, 291
Profits, 26, 91, 133, 135, 138–140, 175, 186, 191, 199, 237, 244, 249, 251
Prussia, 30

Q
Qing, 11, 30, 77, 81, 82, 119, 122, 127–129, 133–135, 137–143, 145–151, 155–181
Qing foreign policy, 134, 143, 145
Qing leadership, 141, 152
Quantum computing, 291

R
Recession, 28, 30, 100, 109, 110, 112, 136, 159, 271
Recursive downward spiral, 29
Recursive negative dynamic, 25
Red Guards, 178
Redistribution of income, 176
Refinancing, 29, 32, 219
Reform with losers, 194–206, 220
Reforms, 11, 12, 27, 79, 123, 125, 145–148, 152, 155, 180, 183–196, 198, 200, 202, 213, 215, 216, 218, 220, 221, 227, 235, 236, 238–242, 244, 250, 252, 261, 262, 268–270, 275, 282, 287, 307
Renminbi, Chinese (RMB), 262, 264, 268
Rent-seeking, 27, 125, 135, 152, 155, 165, 175, 177, 181, 186, 235, 252, 271, 286, 305, 307
Research and Development (R&D), 274, 291
Resource curse, 45, 58
Rich nation, strong army, 81
Rome, 21, 23, 30, 130
Russia, 6, 76, 82, 134, 142, 143, 148, 151, 178, 268
Russo-Japanese war, 82, 148

S
Samsung, corporation, 54, 267
Schism, 149, 177, 281–286, 288, 292, 293, 299, 301
Schism-Shadow, 298
Scholar-officials, 125, 135, 147
Schumpeter, J.A., 17–19
Scientific publications, 263
Secondary industry, 162, 172, 187, 188, 212, 216, 217, 226
Self-criticism, 171
Self-strengthening, 143–148, 152, 161, 164
Semiconductors, 267, 291
Services sector, 95, 186, 244
Shadow-Schism, 292, 293, 298, 299
Shadow-Song, 292, 293, 298, 299
Shipbuilding, 97, 98, 128, 146
Silk, 77, 79, 136, 163, 164
Sine wave, 31
Singapore, 82, 136, 203, 205, 207, 229, 230, 247, 248
Sino-British Treaty, 141
Sino-Japanese War, 82, 122, 147, 152, 164, 167, 169
Sino-Japanese War indemnity, 79
Snooks, G.D., 4–6, 11, 17–20, 23–27, 31, 47, 65, 66, 68, 119, 121, 124–126, 128–133, 156, 174, 202, 282, 285, 288, 305
Snooks-Panov vertical, 306
SOE reform, 186, 244, 269, 270
Song dynasty, 11, 119
South China Sea, 264, 268
Southern Tour (of Deng), 193, 194, 196, 200
South Korea, 205, 207, 230, 233, 241, 247, 248, 270, 290
Sovereignty, 147, 168, 275
Soviet, 150, 173–176, 178, 286
Spain, 23, 128, 220
Stalin, 151, 176, 193
State Owned Enterprises (SOEs), 175, 177, 187, 191, 198, 199, 244, 252, 253, 262, 263, 269, 270, 274
Steel, 79, 167, 176, 210–212, 269, 270
Strategic Alternator, 4, 5, 7, 18, 25, 30–37, 50, 52, 53, 87, 89, 91, 96, 102, 108–111, 185, 186, 193, 196, 202, 213, 215, 219, 226, 271, 273, 286
Strategic confidence, 10, 25, 26, 28–33, 35–37, 44, 50–52, 73, 88, 89, 92, 94, 96, 102, 104–106, 108, 109, 156, 169, 238, 268, 270, 272, 273
Strategic core, 10, 19, 73, 86, 87, 91, 93, 109, 111, 240, 246, 249, 251, 273, 282

Strategic deflation, 26, 106
Strategic demand, 25, 32, 126, 152, 186, 240
Strategic exhaustion, 19, 26, 29, 52, 54, 96, 101, 108, 158, 170, 306, 307
Strategic imitation, 25, 92, 305
Strategic inflation, 25, 104
Strategic kink(s), 7, 12, 84, 100, 111, 121, 161, 162, 183, 194, 200, 220, 268, 281–283, 285, 292
Strategic leadership, 10, 29, 43, 52, 64, 87–92, 97, 104, 108, 111, 126, 165, 183, 184, 240, 301
Strategic mix, 4, 6, 24, 25, 74, 86–88, 111, 123, 125–130, 132, 133, 145, 151, 152, 160, 161, 165, 169–171, 192, 226, 227, 276, 281–283, 286, 295
Strategic opportunity, 186, 220, 260, 268
Strategic pathways, 6, 7, 11, 12, 30, 55, 100, 121, 155–181, 183, 213, 220, 221, 230, 250, 266, 281–301, 306
Strategic pursuit, 13, 18, 23, 69, 73–112, 259–276
Strategic taxonomy, 6, 23
Strategic viability, 25, 27, 28, 52, 192
Strategy Grid, 3, 6, 7, 12, 75, 83, 96, 98, 100, 106, 109, 169, 170, 179, 183, 189, 190, 194, 195, 213, 254, 266, 281, 283, 292, 297–301
Subsidiary strategies, 21–23, 61, 79, 81, 86, 111, 121–123, 132
Sub-strategies, 6, 23, 24, 30, 32, 74, 75, 89, 93, 108, 109, 171, 307
Sun-Yatsen, 148, 149
Supercomputers, 263, 291
Supply Side Structural Reform (SSSR), 261, 269, 270
Survival, 18, 28, 145, 284

T
Tacit knowledge, 126, 173, 212, 249, 289
Taiping Rebellion, 77, 141
Taiwan, 82, 142, 203, 205, 207, 230, 247, 268, 290
Tariffs, 77, 141, 144, 149, 168, 202, 267, 271
Tea, 77, 136–138, 162–164, 206
Technological change, 6, 10, 19, 20, 23–25, 41, 49, 53, 61, 73, 81, 87, 110, 111, 122, 123, 126, 127, 130, 161, 169, 282, 306
Technological paradigm, 6, 19, 20, 69, 121, 125, 306
Terms-of-trade, 90, 91, 94, 97, 175, 176, 185, 215, 216, 219, 251
Terms-of-trade, inter-sectoral, 91, 97, 175
Thailand, 200, 203–205, 228, 230, 233, 247
Third Front, 177, 187, 284
Third Plenum, 184, 185, 189, 190, 236, 260
Three Tough Battles, 261
Tiananmen Square, 189, 192
Tientsin episode, 143
To gunboat diplomacy, 142
Tokugawa, 8, 76–86, 134, 205
Township and Village Enterprises (TVEs), 186
Trade practices, 299
Treasury Secretary Yellen (United States), 267
Treaty of Nanking, 140, 141
Treaty of Shimonoseki, 82, 142, 164
Treaty port, 11, 135, 141, 142, 150, 160, 164, 168, 169

U
Ukraine, 264, 268
Uncertainty, 3, 4, 10, 12, 28–30, 79, 94, 156, 181, 183, 189–194, 236, 265, 268, 281, 295, 301
Unemployment, 36, 199, 220
Unitary empire, 11, 119, 124, 129, 151, 155
United States, 290
Urbanisation, 9, 10, 225–227, 233, 236, 243–246, 254
US dollar (USD), 93, 98–101, 108, 198, 200, 209, 249–251, 264, 268
U.S.S.R, 63

V
Venice, 21, 24, 30
Vertical fiscal imbalance, 246, 263
Vested interests, 145, 195, 234, 252, 268
Viability of strategies, 30
Vietnam, 133, 178, 204, 228, 247, 248
Virtuous circle, 29, 89

W
Wages, 83, 86, 178, 208, 242, 247, 248, 251
Warlords, 124, 132, 149, 168, 170, 175
Wealth, 29, 30, 79, 102, 109, 130, 132, 133, 144, 147, 241, 288, 305
Westernisation, 144, 145
Whampoa, 149

Wild geese, 44, 95
See also Flying geese model
"Wolf-warrior" diplomacy, 264, 265
Workers, 83, 161, 176–178, 199, 206, 226, 236, 237, 242, 297
Work Reports, 259, 265, 266, 268, 273–276
World economy, 5, 9, 18, 83, 94, 216, 220, 228, 229
World-system, 3–6, 10–13, 19, 73, 111, 120, 157, 158, 184, 220, 226, 228, 240, 249, 260, 261, 281–301
World trade Organisation (WTO), 200, 202–206, 209–213, 216, 218, 220, 249–251
World War I, 82, 84, 86, 159, 162
World War II, 10, 73–86, 111, 166, 287

X
Xi Jinping, 3, 13, 183–221, 259–276, 284
Xi Jinping Thought, 259, 260
Xinjiang, 264

Y
Yalta conference, 151
Yuan-Shikai, 142, 149

Z
Zhao Zhiyang, 191
Zhu Rongji, 194, 196, 198–200, 215, 216
Zollverein, 61